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H. D. McCaskey
Chief, Mineral Resources, U. S. Geological Survey
(See sketch on page 314)

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VOL. 2, NO. 7 WASHINGTON JULY, 1916

THE MINING CONGRESS JOURNAL

Official Organ of the American Mining Congress

OVER 500,000,000 TONS OF BITUMINOUS COAL WILL BE MINED IN U. S. IN 1916

Estimate Made by Geological Survey Places Current Year Production High Above Any Previous Record—First Six Months of 1916 Show Remarkable Coal Production, to Which Every Producing State Contributed an Increase

The output of bituminous coal in the United States during the first six months of 1916 was the greatest ever recorded in any half-year period. Estimates by C. E. Lesher, of the United States Geological Survey, based on returns from over 100 railroads originating coal and coke shipments, indicate that the production during this period was 261,000,000 tons, an increase of 35 per cent over the first six months of 1915, and of 5 per cent over the last six months of the same year, and greater by several million tons than the record established in the last half of 1913.

Compared with the first half of 1915 the exports from the Atlantic seaboard during the last six months have increased about 10 per cent, and the exports to Canada have nearly doubled. The movement of bituminous coal through the Soo Canal on the Great Lakes shows an increase of 80 per cent, and the coal used in coking has increased nearly half. Increased consumption by railroads and by the iron and steel and nearly all other industries has been a large factor in establishing this record.

From April, 1915, to January of the present year the production of bituminous coal increased at a rapid rate, with but temporary slackening in November and December due to car shortage. The output in January, 1916, was more than 60 per cent greater than in April, 1915, and the production in February and March, 1916, was nearly as great. Many large users of coal laid in stocks of fuel in anticipation of a possible shut-down at the mines in April because of labor troubles, and though there was no general strike, the production in April declined greatly as a result of decreased buying on the part of those having stored coal to use. May and June, however, showed successive increases, and there is every indication that the production during the coming six months will equal if not exceed the six months just past, and that the output in the calendar year 1916 will exceed 500,000,000 tons, establishing a new record for bituminous coal.

Every coal-producing State from Washington to the Atlantic coast has shared in this general increase.

The output of beehive coke has increased from about 11,250,000 tons in the first half of 1915 and 16,250,000 tons in the second half of 1915 to more than 18,000,000 tons during the last six months. The manufacture of coke in by-product ovens has also increased as new ovens have been completed and put in commission.

The production of Pennsylvania anthracite increased about 3 per cent over the corresponding period in 1915.

TEXAS INCREASES ITS OUTPUT OF WHITE METAL

The United States Geological Survey reports that the Presidio silver mine of Texas was in continuous operation during the first six months of 1916, and that mining was also carried on actively during that period in the Van Horn and Sierra Blanca districts, all in the trans-Pecos country. The net result was a small output of copper, lead, and zinc, but a production of silver for the six months of fully 340,000 ounces.

As this issue of the JOURNAL goes to press the Sundry Civil bill, carrying the appropriations for three of the mine experiment stations authorized at the last session of Congress, is in conference. There is no probability of the rejection of the item providing for the three experiment stations.

Following the signing of the bill by the President Secretary Lane will designate the points at which the new stations are to be located. While no intimation can be obtained of the places Mr. Lane has in mind it is understood that one will be in the southwest, one in the northwest and one in Alaska.

COMMISSIONER HURLEY TALKS TO OPERATORS IN PITTSBURGH

More than 150 operators from eastern Ohio, the Hocking Valley, and western Pennsylvania, Greensburg, Westmoreland, and central Pennsylvania districts met in Pittsburgh last month and listened to Edward N. Hurley, of the Federal Trade Commission.

Mr. Hurley made a straightforward statement to the effect that the Commission is willing to study conditions if the operators will give it the necessary data. After securing it, such recommendations as possible will be made.

The Commission is making up a set of questions which will be sent to each of the operators. When the replies are received they will be tabulated and a study made of them. The Commission will try to work out some solution to be presented to Congress.

One of the things Mr. Hurley emphasized strongly was the question of uniform accounting. It is very evident that the Mining Congress Committee, of which S. A. Taylor, is chairman, which has been working on this matter for some time and has had a number of meetings with Mr. Hurley, is achieving success.

The disposition manifested in the meeting was one of hearty cooperation.

MINING MAN HAVING HIS INNINGS, SAYS GEO. OTIS SMITH

"The accomplishment of the mining industry in the six-month period just completed warrants the forecast that 1916 is to be a record-breaking year." With this statement Geo. Otis Smith, the Director of the United States Geological Survey, sums up his official mid-year review of the mineral industry as reported to him by the Government geologists and statisticians covering the different subjects. "Active demands and good prices have furnished the mine operators with full opportunity for success in working developed properties, and this in turn has given added incentive and available funds for exploration, prospecting, and experimentation with new processes. The mining man is having his innings."

COPPER OUTPUT IN ALASKA WILL EXCEED ALL RECORDS

The Alaska mining industry will have a very prosperous year in 1916, according to a statement by Alfred H. Brooks, of the United States Geological Survey, covering the operations during the first six months of the year. Copper mining will probably show the greatest advances. About fifteen Alaska copper mines are now shipping ore, and developments are being pushed on others, indicating that they may become producers before the end of the year. There is every reason to believe, therefore, that the Alaska copper output for 1916 will be greater than that for any previous year.

The gold lode mines of Alaska will make a larger production this year than last, but it is not now expected that the placer-mining industry of Alaska will show any marked increase.

The shipment of antimony from Alaska is continuing, and some tungsten ores have already been shipped form the Fairbanks district.

SECRETARY LANE ORDERS MID-YEAR REPORTS CONTINUED

"The mid-year review was so well received last July," said Secretary Lane, "that I believe it met a public need, and it will therefore be continued as one of the services rendered to the public by the Interior Department. The business of the whole country has become so interdependent that facts regarding our mines and mills and furnaces are of real concern to every citizen interested in any industrial undertaking. That the mining industry is making many new records in the extent and success of its business must be taken as an index of the nation's general prosperity. Best of all, 1916 is registering another advance in the growing independence of the United States as a producer of the many materials that civilization has made necessary. Our country is coming into its own."

HOMESTAKE PRODUCES NEARLY $4,000,000 IN HALF YEAR

The Homestake mines and mills and the other smaller mills in the Black Hills, South Dakota, have been operated continuously, according to reports received by the United States Geological Survey, producing approximately $2,700,000 in gold for the first six months of 1916.

Dynamite Prices Soar

As a result of abnormally increased use of sulphuric and nitric acid and because of the shutting off of the supply of glycerin from Europe, the cost of manufacturing dynamite of all grades, but especially those containing a high glycerin content, has been largely increased recently. In fact, the cost of straight nitroglycerin dynamites has practically doubled and even the ammonia dynamites have increased greatly in cost.

COPPER PRODUCTION DURING FIRST SIX MONTHS OF 1916 EXCEEDS ALL RECORDS

With an Average Price of Twenty-Six Cents a Pound American Mines Disgorge Themselves of Immense Tonnage of Red Metal—Output of Blister Copper Approaches Two Billion Pounds—Output Sold Many Months Ahead

Under the influence of large demands and resultant high prices the production of copper during the last six months has exceeded that of any equal period in the history of the industry.

The United States Geological Survey states that there has been a steady rate of increase in the output since early in 1915. The production during the last half of 1915 considerably exceeded that of the first half, according to the report by B. S. Butler, of the Geological Survey, and during the year the refineries produced, from both domestic and foreign ores, a total of 1,634,000,000 pounds of blister copper, of which 1,388,009,527 pounds was produced from ores mined in the United States.

The price for the period has averaged above the highest price received for copper at any time in recent years, the average for the first six months of 1916 being more than 26 cents a pound. The cost has doubtless increased slightly, as the important copper companies have increased the wages of their employes, but this increase has been largely offset by decrease in cost due to working plants at the maximum capacity. Many small mines are operating that could not be profitably worked under normal conditions and this, of course, tends to increase the average cost per pound.

The profits of the producing companies have been large and as much of the output is sold several months ahead of delivery the prosperity of the industry is well assured for the remainder of the year, so that 1916 will doubtless be the most profitable year in the history of copper production to the present time.

OLD SILVER CAMPS REALIZING ON MANGANESE ORES

All grades of manganese ores are in great demand. Prices are higher than they have been for thirty years. Good grades of manganese containing forty to fifty per cent manganese and more than one per cent of iron, are now worth in the eastern markets $25 to $35 per ton. High grade ores containing fifty per cent or more of manganese and less than one per cent of iron, such as are adapted to the manufacture of dry batteries and flint glass, are bringing $85 to $100 per ton.

A number of the old silver mining camps, in the ore of which a considerable amount of manganese dioxide is found, are being searched carefully for high-grade manganese ores and a considerable production is being developed. Principal among these camps are Pioche, Nevada; Tombstone, Arizona, and Leadville, Colorado.

While these camps are producing the greater amounts of manganese at present, many of the smaller camps are making important contributions to the supply of manganese ores. According to geologists here, who are intimately familiar with many of the western mining camps, many of these districts possess manganese ores which, with proper care and sorting, would stand the expense of shipment to points east of the Mississippi River.

Many new deposits have been reported to the Geological Survey during the past year, but the greater portion of these apparently are not capable of producing ores containing less than one per cent iron. It is for this character of ore that the demand is the greatest. There is every reason to believe that the shortage of manganese ore will continue until an outlet for the Russian ore is secured.

ALABAMA MINE SAFETY ASS'N. PRAISED BY H. M. WOLFLIN

The work done at the recent field meet of the Alabama Mine Safety Association is declared by H. M. Wolflin, safety engineer of the Bureau of Mines, to have been the most excellent State meet that he has attended this year. He was very much impressed with the work that has been done by the Alabama association, and is very much pleased with the efficiency of the teams. The interest of the public in this movement is attested, Mr. Wolflin stated, by the very large attendance at the meet.

GEOLOGIST SENT TO UTAH IN REPLY TO PETITION

In reply to a petition by the Utah Chapter of the American Mining Congress, George Otis Smith, Director of the Geological Survey, has sent B. S. Butler, of the Survey's staff, to the Cottonwood-American Fork District of Utah to make a detailed examination of the region in which the present mining activity is in progress.

PAIGE SUGGESTS HYPOTHESIS AS TO ORIGIN OF ORE BODY AT GREAT HOMESTAKE MINE

Sidney Paige, one of the few government geologists who have been permitted to enter the Homestake mine at Lead, S. Dak., suggests the hypothesis that the Homestake ore body is *in the main* a replacement deposit in a calcareous slate series and that it owes its position to the presence of a strong fault and its form to its replacement character and to structural factors. He describes the position and form of the ore body as follows:

The form and position of the surface croppings of the Homestake ore body may be gathered from a study of the open cuts. It is observed that there are two parts: a wide part, that to the south (the great open cut at Lead), and a narrow part, that to the north, terminating in the De Smet cut on the southern rim of Deadwood Creek.

The narrow portion begins to spread and merge into the wide portion at a point where stratigraphic work indicates the presence of the main body of the calcareous series. The narrow portion appears to be a single calcareous bed thrown into a sharp fold well exposed as a narrow synclinal trough in the northern end of the De Smet cut.

The western boundary of these surface exposures is a relatively straight line and is believed to be, for reasons already set forth, a fault-plane.

The outcrop of the Caledonia ore body has been shown to coincide very nearly with the outcrop of a part of the calcareous series. The strike is directly toward the main Homestake ore body; in fact, a portion of the two open cuts are very close together.

Beneath the surface the form and position of the ore body is even more significant. The wider portion, on a given level, is delimited in certain definite ways. First, on the western or footwall side by a relatively straight line—the fault-line; second on its southern end by a number of narrow fingers, which examinations show to be actual folds—that is, the ore is sharply cut off by wall rock which curves around it; and, third, on the north-northeastern side—that is, in the direction of strike of the rock series—by indefinite fading away of ore. The inference is that here a definite series of beds striking north-northeast has been folded, cut off by a fault, and mineralized.

The ore body plunges in the direction of the intersection of the fault-plane with the steeply dipping beds, and at each succeeding level is capped by a greater thickness of barren rock. The Caledonia ore body pitches with the dip—that is, the replaced beds are cut by no fault-plane. Its northern extension is taken to be limited by the distance from the fault-plane that solutions were able to replace limestone, its southern extension by late igneous intrusion, which separated the ore body from the main mass along the fault.

PRODUCTION OF SCHEELITE IS 1,000 TONS CONCENTRATES ANNUALLY

Scheelite is mined in the United States by the Atolia Mining Company, with mines at Atolia, Cal., office 1404 Humbodlt Savings Bank Building, San Francisco. P. J. Osdick, Johannesburg, Cal., is perhaps the second largest producer of scheelite in the Atolia field. There are also a large number of small producers. Frank Feldman, care of Nichols Ranch, Weldon, Cal., is producing scheelite. The St. Anthony Mines Company, controlled by Atkins, Kroll & Co., 311 California Street, San Francisco, is mining scheelite near Browns (Toy), Humboldt County, Nev. The same company also controls the Doyle Mining Company, mining scheelite at several points in the Snake Range near Osceola, White Pine County, Nev. Other scheelite deposits in the Snake Range are controlled by Capt. Duncan McVichie, Wewhouse Building, Salt Lake City, Utah, by Millick Brothers, Shoshone, White Pine County, Nev., and J. D. Tilford, Osceola (deposit at Camp Bonita on the east side of the Snake Range near Baker postoffice.) Tilford Brothers, Osceola, also have deposits at that town. Vivian Green, 45 West 34th Street, New York City, controls the Golden Chest mine near Murray, Idaho, from which scheelite is now being mined. The Geological Survey has no exact figures on the production of scheelite at the present time, but it is probable that it is being taken out at the rate of at least 1,000 tons of 60 per cent concentrates per year.

TECHNICALITY CURBS DEMAND FOR MAPS OF MINING AREAS

A technicality, which has been of considerable annoyance to those interested in maps of mining areas, is being taken up vigorously by the Geological Survey with the hope of securing some sensible regulation.

When a report is printed with accompanying maps there is frequently a greater demand for the maps than for the entire report. In some cases there are several hundred copies of the maps requested where the full report is not needed. Under the present regulation the Superintendent of Documents may not have a reprint made of a portion of the report. When the report itself is exhausted, the entire report may be reprinted, but in cases where the map alone is desired no one cares to pay the unnecessary cost of having the report itself reproduced. It is very probable that special legislation will be required before this authority can be vested in the Superintendent of Documents.

GOLD AND SILVER OUTPUT IN 1916 TO BE GREATEST UNDER AMERICAN FLAG

Silver, the Last Metal to Benefit by the Increased Prosperity, Came into its Own During the First Six Months of 1916—With Prices at High Mark a Record-Breaking Amount of the White Metal Has been Mined

The precious-metal mining industries continued active during the first six months of 1916, practically all important mines and mills operating at full capacity, according to a statement just issued by the United States Geological Survey. Shortage of cyanide supplies, feared in 1915, was obviated by increased output of domestic sodium cyanide, which has practically replaced potassium cyanide in the leaching of precious metals. Flotation has begun to increase saving of gold from tailings. There may have been some decrease in gold prospecting during the last eight or ten months, as many old gold prospectors have been giving attention to deposits of tungsten, antimony, quicksilver, and other mineral products whose value has enhanced since the outbreak of the war. There was also some labor shortage at mines and mills owing to high wages paid in factories making war supplies.

Final figures of the Geological Survey and the Bureau of the Mint give a total domestic production for 1915 of $101,035,700 in gold, and 74,961,075 ounces of silver, valued at $37,397,300, against $94,531,800 in gold and 72,455,100 ounces of silver in 1914. These figures include the gold production of the Philippines, which has been steadily on the increase.

The total output both of gold and silver reported for 1915 was the highest ever recorded under the American flag, but if the Philippine output be eliminated the production of gold in the United States proper was but little above the previous record year of 1909. The output of silver for 1915 was materially above the preceding record yield of 1914. For 1916, from the mid-year point of view, the output of gold which is apparently falling off somewhat as compared with 1915, in Colorado, California, Nevada, and some other States, and increasing possibly in Arizona, Oregon, the Philippines, Idaho, Montana, New Mexico, and elsewhere, will probably reach a total somewhat below the high output of 1915. The production of silver, however, will undoubtedly again break all previous records, as the output of silver ores and of the copper, lead, and zinc ores which produce silver in notable quantities will exceed that of any preceding year, owing to steady demand and high prices for all metals.

Prices of silver were low in the greater part of 1915. The monthly average commercial price at New York, which rose to about 52 cents an ounce in November, however, reached 55 cents in December, and climbed steadily to over 74 cents in May, 1916, but fell to about 65 cents in June. The sharp increase in prices resulted from strong demand for the Far East at the end of 1915 and abnormally large requirements by the belligerent countries for coinage for the troops in the field. These demands found available stocks low, largely because of the great falling off in the Mexican output due to the long continued disturbance there. With the consequent inevitable rise in prices domestic producers of silver profited greatly, notwithstanding the increased cost of labor and of mining supplies. Silver is in demand not only for coinage but also for sterling and other silver wares, as well as for drugs and chemicals. The manufacture of silver salts used in photography, particularly in films for hand cameras and cinematographs, has vastly increased in recent years. The mid-year outlook indicates continued demand for silver, the metal last to benefit by the general domestic prosperity.

COAL CHEAPER FUEL THAN OIL, GEOLOGICAL SURVEY SHOWS

In discussing the relative value of coal and oil as fuel, Representative Anthony, of Kansas quoted to the House the statement of the United States Geological Survey on the relative economy of oil and coal:

"Under its investigations it was found, he said, that 76 pounds of water can be evaporated by coal for 1 cent; that only 58 pounds of water can be evaporated by oil for 1 cent, comparing the prices for coal and oil that were then prevailing, the $2.10 per ton for coal and the 69 cents per barrel for oil prevailed at the time these figures were made. Now coal is $2.50 a ton and oil is $1.70 a barrel. I hope the House, in view of the present emergency that confronts the Government, admitted, as it is, by the board that with the provision for the most economical fuel it will have to burn coal, will leave this provision in; and then, if economy demands coal there, let the Government practice economy."

John A. Rice, a mining engineer of El Paso, was in Washington recently on his way to Silver City, Ontario. Mr. Rice has just completed some reconnoissance geological work along the Green and Colorado Rivers in Utah. He also has done some professional work recently in the Wyoming and California oil fields.

GOVERNMENT EXPERTS WELL KNOWN TO MINING MEN

(See cut on front cover)

Hiram Dryer McCaskey, son of General William S. McCaskey of Scotch-Irish ancestry and a native of Pennsylvania, was born at Fort Totten, North Dakota, and spent his boyhood at army posts in the western United States. Graduating in mining engineering at Lehigh University, McCaskey served successively as chemist for mining companies and instructor and head-master in several schools. In 1900 he became mining engineer to the Mining Bureau, Phillippine Islands, and served as Chief of the Bureau from 1903 until 1906, issuing a series of reports on the mineral industry of the Islands, based in part on his exploratory work. He was a member of the first party to cross the northern part of Mindoro from coast to coast, after preceding parties had failed owing to excessive hardships. One of his investigations related to artesian water supply for the leper colony on the Island of Culion, another, at the request of the sugar planters of the Island of Negros, involved the ascent of the Canlaon Volcano and a study of the probabilities of damage to the cane fields from its eruption. He visited the famous Taal Volcano several times, once descending to the floor of the crater during an eruption and for a short time was given up for lost. In 1906 he returned to the United States to pursue graduate studies as Fellow in Geology at Lehigh University.

The boyhood training at military posts in pioneer days of the West inculcated habits of system and quick decision which served him well in his various professional engagements, and which, with his Philippine experience, were doubtless influential in deciding Lindgren to choose him in 1907 as assistant and prospective head of the work of organizing the metal resources section of the U. S. Geological Survey to cope with the statistical canvass of the myriad mines of the United States. The same traits led to his appointment as head and to his successful administration of the Mineral Resources Division after the resignation of E. W. Parker.

In the intervals of his administrative work for the Survey he has found some time to make shore geological investigations in connection with mineral resources work, the more important of which were reconnaissance surveys of the Gold Deposits of Alabama, and of the Quicksilver Deposits of the Terlingua District, in the Big Bend region of Texas, recently put on the map for the whole country by the invasion of the Mexican bandits.

His survey work has taken him to many western mining camps in addition to the gold fields of the Southern Appalachians and to many mining districts in the Philippines. He succeeded Lindgren as author of the gold and silver reports of the mineral resources work and has been the Survey specialist on quicksilver since he joined the organization, and has visited practically all the quicksilver mines of the United States.

Of professional societies, among others, he is a member of the American Association for the Advancement of Science, the Geological Society of America, and the American Institute of Mining Engineers. Of social organizations, he is a member of the Loyal Legion, of the Chevy Chase Club, and of the Cosmos Club. He is an ardent angler. Though fishermen proverbially are unduly optimistic with figures, it does not follow that a statistician may not be a safe and sane fisherman.

APEX LAW A GREAT HANDICAP, SAYS JESSE KNIGHT, PROVO, UTAH

"I have read with interest," says Jesse Knight, of Provo, Utah, the editorial in the April issue of the MINING CONGRESS JOURNAL, entitled 'Leasing Bills,' and after considerable thought I have concluded that the Mining Congress will be unable to offer anything in the way of proposed legislation unless it be in the way of amendments to the existing mining laws, doing away with the apex question and providing for the enlargement of lode mining claims so as to include an acreage of not less than forty acres to constitute the maximum area of a lode claim.

"Personally, I am of the opinion that the power of the Mining Congress in opposing the leasing system will be greater by closely adhering to the present mining laws rather than offering something in the way of constructive legislation.

"My experience of over thirty years as a miner, convinces me that the future development of the West will depend in a great measure upon the opportunity afforded the poor man to better himself by seeking for and acquiring mineral rights, and I cannot conceive of any law or legislation that would be more helpful than the existing law, modified in some particulars, principally those that I have mentioned regarding the enlargement of the lode mining claim and the doing away with the perplexities of the apex question.

"I fear that if we do not hold fast and adhere to the rights accorded the citizen under the existing mining laws and we should attempt to propose or advocate a new system of laws along constructive lines, that we would lose, instead of gaining, ground."

Increases Gold Production

The value of the gold, silver, and lead produced in South Dakota in 1915 from 33 productive mines, 10 of which were placers, amounted to $7,507,782, compared with $7,431,343 in 1914, as reported by Charles W. Henderson, of the United States Geological Survey.

ZINC PRODUCTION INCREASES THIRTY PER CENT OVER THAT OF LAST YEAR

First Six Months of Current Year Show Heaviest Output of Lead and Zinc in History of Mining in the United States—Joplin Probably Will Ship 70,000 Tons More Concentrates This Year Than Last

Reports received by the United States Geological Survey show that the mine production of lead and zinc ores during the first six months of 1916 was much larger than that of any preceding six months. The lead and zinc mines have been able to produce all the ore needed to supply the increased capacity of the smelters. The ore and concentrates were sold at prices which yielded large profits, notwithstanding increased costs of production and the working of large quantities of low-grade ore which could not be mined at a profit under normal conditions. High-grade zinc concentrates free or nearly free from lead and iron continued to be in demand, and the base price offered for such concentrates was generally much higher than that offered for low-grade concentrates.

The shipments of sphalerite concentrates from the Joplin region during the first six months of 1916 amounted to about 180,000 tons, valued at more than $17,000,000, as against 296,000 tons, valued at $23,419,000 for the calendar year 1915. The demand was not as active during the last month of the year, when the base price for concentrates decreased nearly $20 a ton. Unless the base price declines to a point which will prevent the mining of lean "sheet ground" the production of zinc concentrates from the Joplin region in 1916 will probably be 60,000 to 70,000 tons more than in 1915.

Development in the Miami, Okla., camp continued to be favorable, and the production should be much larger during the last half of 1916. The increase from Kansas will not be large, for excessive rains have hampered operations. The "soft ground" mines in southwest Missouri have not shown any largely increased yield, but the "sheet ground" has been actively mined and many new mills put in operation. The strike of the hoistermen in the Joplin district reduced the output in June, though few of the mines were closed down for any great length of time. Some of the mine owners seized the opportunity to make much needed repairs or additions to their plants.

The stock of zinc concentrates unsold in June was larger than usual but probably was not much more than two weeks' production. The production of zinc carbonate and silicate showed no great increase, and the galena concentrates sold indicate a production of about 56,000 tons in 1916, or 11,000 tons more than in 1915. The selling price of the lead concentrates was nearly double the average price in 1915.

The large mines in the disseminated lead district of southeastern Missouri were operated steadily, and although no figures are available for 1916 the output was larger than it was during the first or the last half of 1915.

The number of producing zinc properties in Arkansas increased rapidly and many new mills were operated. The output of sphalerite concentrates was negligible but that of zinc carbonate increased more than 100 per cent. The zinc carbonate is of high grade, and the production of such ore in 1916 in Arkansas is exceeded only by that of the Joplin region.

The zinc ore mined in New Jersey in 1916 was at least as large as in 1915, and the production from Tennessee and Virginia was larger than in the first six months of 1915.

The shipments of raw sphalerite from mines in the Upper Mississippi Valley region steadily increased, and the capacities of the roasting and separating plants were much greater than in 1915. A number of new mines were opened and concentrated plants constructed.

The New Diggings camp was especially active, though development was active in all the other camps.

The shipments of raw sphalerite concentrates amounted to more than 100,000 tons, compared with shipments of 162,000 tons during the calendar year 1915.

In the western States small increases of both lead and zinc were made in Arizona, Colorado, New Mexico and Washington. In Nevada an increased quantity of zinc ore was shipped from Clark County and the lead ore shipments from the Pioche, Goodsprings and Eureka districts indicate a considerably large output of lead from Nevada for 1916.

In Utah the Bingham district made a record output of lead during the first six months of 1916. The zinc production of Utah will probably be only slightly more in 1916 than it was in 1915.

The Coeur d'Alene region in Idaho shipped 30,000 tons of lead ore or concentrates a month. The Interstate, Callahan, Success, Frisco and other mines were shipping more than 8,000 tons of zinc concentrates or ore monthly, which is much more than the shipments in 1915.

In Montana the lead production increased because more lead-zinc ore was mined. The increased yield of zinc probably amounted to above 30 per cent, as the Butte & Superior mine was producing at the rate of 96,000 tons of concentrates yearly and the Elm Orlu at the rate of 60,000 tons.

The reports from all States indicate that the production of zinc ores in the United States in the first six months of 1916 was at a rate of 25 to 30 per cent larger than that in 1915.

NEVADA'S COPPER OUTPUT IS DOUBLE THAT OF LAST YEAR

Mine reports received by the U. S. Geological Survey from V. C. Heikes of the Salt Lake field office indicate that during the last six months the mining industry in Nevada has experienced one of its greatest revivals. Old mines closed down for years have resumed or are being put in shape for production, and the regular producers have increased their output to the fullest capacity. At many points the use of tractor engines, hauling on each trip as much as 30 tons of ore between mine and railroad have helped to improve conditions, as formerly there were not teams enough for all purposes. The many milling plants of the State are reported to be in full operation, and a number have adopted the flotation process for increased saving. In the Yellow Pine district five dry mills are operated on zinc ores. Only one of the two copper smelters in Nevada was in operation.

Gold will likely show little increase. The declining production at Goldfield may be made up to some extent from the general increase in output of ores. No new gold deposits of note have been found. The placer-gold production at Manhattan and Round Mountain is about the same, the latter making up for any decrease in the former. Silver may show a gain from increased operations made at Rochester, but the increase will probably be offset by the idleness of the mines in Churchill County. Little if any of the silver output is held in storage for higher prices compared to the quantity so held in 1915.

The production of ore containing lead has been greater than in recent years, principally from Pioche, Goodsprings, and Eureka. Ely produces most of the copper, and at the rate of production for the last 6 months will yield 92,000,000 pounds of the metal in 1916. Copper properties in the vicinity of Luning and Yerington have been active in shipping low-grade ores to the Salt Lake smelters at the rate of about 2,000 tons monthly. Deposits of zinc ore have been opened in Elko County, where about 600 tons is being produced and shipped to eastern markets every month. In Clark County, around Goodsprings, about 2,800 tons of oxidized zinc ore was shipped in May and as much during the previous months. At Pioche a small output of zinc sulphides was recorded.

As the copper output has been increased more than 50 per cent, the value of the output at present prices will be double that of the past year.

JEFFREY OPENS OFFICES IN DALLAS AND SAINT LOUIS

The Jeffrey Manufacturing Company recently opened new branch offices at Dallas and St. Louis.

The Dallas office will be located in the Commonwealth National Bank Building, and will be in charge of J. U. Jones. With twenty years of successful salesmanship to his credit, and a thorough personal knowledge of the State of Texas and the requirements of its buyers, Mr. Jones is especially well equipped to take care of the constantly increasing demand for Jeffrey products in his vicinity, and render valuable assistance to clients in solving their elevating, conveying and transmission problems.

W. V. Cullen has been placed in charge of the St. Louis office, with headquarters in Room A-21, of the Railway Exchange Building, which office has been opened in order to supply the many requests from manufacturers in and about St. Louis for advisory service in connection with their conveying and power-handling problems. Long experience in sales engineering work, and training in the application of Jeffrey products especially qualify Mr. Cullen for handling this work.

Vanadinites Little Used

Vanadinite ore was at one time considerably used but since the opening up of the large patronite (vanadium sulphide) deposits at Minas Ragras, Peru, and the roscoelite deposits near Placerville, Colorado, very little vanadinite has been used in this country although it is understood that it has been exploited abroad, particularly in Spain. The Primos Chemical Company, Primos, Pennsylvania, and the American Vanadium Company, Vanadium Building, Pittsburgh, Pennsylvania, are the two principal manufacturers of ferro-vanadium in this country. The Electro-Metallurgical Company at Niagara Falls, New York, makes ferro alloys.

Geologists Sent to Idaho

J. B. Umpbley and E. L. Jones, of the Geological Survey, are engaged in work in the Coeur d'Alene district. They will also visit the Pine Creek district in the same vicinity. Considerable new mining activity is now in progress in the Pine Creek district.

CRUDE OIL PRICES MAINTAIN NEW HIGH LEVEL DURING LAST SIX MONTHS

Drilling Activity Increases Enormously But No New Pools Discovered During First Half of Year—Development of Old Pools Carried on With Great Success —Output Greater Than Half of Last Year's Total

The quantity of petroleum marketed in the United States during the first half of 1916 is estimated by John D. Northrop, of the United States Geological Survey, at 140,000,000 barrels. His estimate is moderate and his apportionment of the output among the major fields is as follows:

Field	*Barrels*
Appalachian	11,400,000
Lima-Indiana	1,800,000
Illinois	7,900,000
Kansas and Oklahoma	50,500,000
Northern and Central Texas	4,200,000
Northwest Louisiana	6,800,000
Gulf Coast	11,400,000
Wyoming and Montana	2,400,000
California	43,500,000
Miscellaneous (Colorado, Michigan, and Missouri)	100,000
	140,000,000

This quantity, which includes a little oil actually produced in 1915 but marketed during 1916, is appreciably less than the output during the first half of 1915, though it is greater by about 5,000,000 barrels than one-half the entire quantity marketed last year. When it is considered that the first half of 1915 includes the period of maximum production of the Cushing pool in Oklahoma and the Crichton pool in northwestern Louisiana the disparity in output between the corresponding periods is not especially significant. The magnitude of this quantity, the fact that it is greater than one-half the total petroleum marketed in the United States in 1915, and the further fact that it reflects the results of general activity throughout all oil-producing areas rather than flush production in restricted areas is, however, significant and leads to no other conclusion than that the final statistics of oil marketed in 1916 are destined to establish a new record.

The outstanding feature of the petroleum industry during the half-year just closed was the high level reached in the prices of crude oil in March and maintained firmly to the end of the period. This level involves prices ranging from 90 to 350 per cent higher than those of a year ago for high-grade Eastern and Mid-Continent grades and reflects less strongly the decreased capacity of Cushing than it does the increased demand for crude oil resulting from the activity of a large number of new refineries installed during the recent period of low prices.

As a consequence of the incentive afforded by the high prices in the early part of 1916, activity in drilling increased enormously in all fields with the opening of spring, and though within the half-year period no strictly new pools were discovered there was a development of old pools and new extensions that was attended with gratifying success. So marked was this success in the Augusta and El Dorado pools in southern Kansas, the Blackwell pool in Kay County, Okla., and the Shamrock extension of the Cushing pool in Creek County, Okla., that at the end of the half-year period the production and consumption of crude oil east of the Rocky Mountains are essentially in balance and a tendency toward weaker prices for Mid-Continent grades is apparent. Thus far this tendency has affected high-grade crude oil only to the extent of lowering the premium on certain types that are in greatest demand, but its influence on market quotations is inevitable if production continues its steady increase or if the remarkable wildcat campaign now under way in the Southwest results in the discovery of even one considerable pool of high-grade oil.

Little Data on Sylvanite

The Geological Survey has issued nothing especially on sylvanite, but the assay of tellurium-bearing ores including sylvanite was treated in Bulletin 253, and Professional Paper 54 treats of the Cripple Creek District, Colorado, which is the great sylvanite and gold telluride bearing district. These publications are both out of stock at the Survey, but Bulletin 253 may be purchased from the Superintendent of Documents, Washington, D. C., for ten cents. Professional Paper 54 is entirely out of print, but a copy of this report may be consulted in the public libraries of the larger cities of the country.

Jeffrey Has New Bulletin

The Jeffrey Manufacturing Company of Columbus, Ohio, has issued its bulletin No. 177, dealing with self-propelling wagon and truck loaders. These loaders are especially valuabel in handling crushed stone, sand, gravel, clinker, coke and similar materials. They have a capacity of 1 to 1¼ cubic yards per minute and will load crushed stone into an average size wagon in three or four minutes. The wages of two to five shovellers are saved.

QUICKSILVER OUTPUT IN 1916 WILL EQUAL THAT OF LAST YEAR

The domestic quicksilver industry has continued active during the first six months of 1916, and the average price for the period has been about double the exceptionally high average for the entire year 1915.

Figures just compiled by the United States Geological Survey show that the total production of quicksilver in the United States in 1915 was 21,033 flasks of 75 pounds each, having a marketed value of $1,826,912, or an average of $86.86 per flask. Of this output 14,283 flasks, selling for $1,174,881, came from California, and the remainder almost entirely from Texas and Nevada. The actual average sales value for the whole country exceeded the average market value in San Francisco—which was $85.80 for the year. In 1914 the domestic output was 16,548 flasks, valued at $811,680, and therefore the production for 1915 showed an increase of over 27 per cent in quantity and 125 per cent in value.

The increased domestic demand for quicksilver in the last eighteen months has been due mainly to war requirements for fulminate and drugs. Early in 1915 domestic stocks began to be drawn upon and production became more active, but as foreign embargoes left the field clear and domestic output was unable to meet the rapidly increasing call for the metal, prices continued to rise throughout the year and into the early months of 1916, the high mark of $300 a flask being passed in February. Naturally every mine and prospect became of interest. The reaction set in, however, as the high prices drew out quicksilver supplies in Mexico and elsewhere that had been originally purchased for amalgamation of gold and silver ores, and finally as the British Government permitted exports to America under certain limitations. The average monthly domestic price in San Francisco, which had climbed from $51.90 in January, 1915, to $295 in February, 1916, dropped to $219 in March, $141.50 in April, $90 in May, and about $72 in June.

The market remained steady and in general highly profitable, and as domestic prices have dropped below London quotations exports rather than imports of the metal may be expected. There is probably no great quantity of metal stored, and consumption is undoubtedly abnormally large.

Favorable markets have brought out great activity in search for new prospects, and discoveries near Morton, Wash., and Beagle, Oreg., in 1916 have led to some development and construction of reduction plants. Also in the Skull Valley deposits, Ariz., referred to many years ago by W. P. Blake, and at Black Pine, Idaho, some activity is reported. Many old furnaces have been repaired or enlarged in California, Nevada, and Texas, old workings have been reopened, and new discoveries have been developed.

Very likely the exceptionally high prices of the last few months have led to gouging and robbing many mines of their best ore, and the average tenor of the ore worked by the larger mines during the first half of 1916 may prove considerably below that of previous years. Moreover, some mines have undoubtedly passed their maximum productivity. These conditions are probably offset to some extent by the fact that more furnace capacity is now working on quicksilver ores than at any previous time in the history of the industry. On the whole the midyear outlook is for an output in 1916 fully equal to that of 1915.

MANGANESE MINING SHOWS GREAT ACTIVITY DURING 1916

There has been a greatly increased activity among the manganese mines of the United States during the first six months of 1916. This activity is shown by the operation of new mines, the reopening of old mines, and more regular production from the mines already active. There is a prospect that the production for the entire year, according to D. F. Hewett, of the U. S. Geological Survey, will greatly exceed that for 1915, which was 9,651 tons, the largest since 1901. Several discoveries are reported from Arizona, California, Oregon, Utah, and Virginia, and there are new operators in Arkansas, California, New Mexico, Utah, and Virginia.

During the first quarter of 1916 the prices of all grades of manganese ore rose rapidly to the highest figures recorded in 30 years. Prices of 60 to 65 cents a unit for ore containing 45 to 50 per cent of manganese and more than 1 per cent of iron were freely offered about April 1 and it is reported that 70 cents a unit, or $35 a ton was paid for several lots. During the second quarter prices remained constant at these figures. Large quantities of Brazilian ore continue to be received, and there is a prospect that the imports will exceed those of 1915, which were the largest on record with the exception of one previous year.

Several new producers have entered the ferromanganese field, and although imports from England appear to be greater than last year, it appears that the domestic production for 1916 will be the largest in the history of the country. Prices for ferromanganese for immediate delivery in March reached the highest figure ever recorded—$425 a ton for small lots—and large quantities were sold for $350 to $400 a ton. For delivery within six months the price has remained constant at $175 a ton. During the second quarter prices receded to $350 a ton for immediate delivery.

As long as the present demand for steel continues there is little prospect for greatly reduced prices of either manganese ore or ferromanganese, and even if peace is declared during the winter prices can scarcely decline to normal for at least six months or a year.

Producers of manganese ore particularly should realize that never before for so long a period has there been a better opportunity for the profitable mining of manganese ore. They should realize also that this condition cannot continue indefinitely.

LAKE SUPERIOR IRON MINES SHIPPING ORE AT RATE OF 2,000,000 TONS MONTHLY

An Increase of Eighty-three Per Cent Shown During First Five Months of 1916 Over the Corresponding Period of Last Year—United States Will Produce 70,000,000 Tons of Iron Ore This Year, Thus Setting New High Record

The first six months of 1916 in the iron industry showed a continuation of the highly prosperous conditions that prevailed during the last four or five months of 1915, according to E. F. Burchard of the United States Geological Survey. In fact, activity was even greater in 1916 than in the first half of 1915. Large increases are shown in the output of both iron ore and pig iron. The shipments of ore from the Lake Superior region during the first five months of 1916 were more than 10,000,000 gross tons, or 83 per cent greater than those of the corresponding period of 1915.

Ore prices at lower lake ports for 1916 were increased 75 cents a ton over those for the season of 1915, but lack of boats is reported to have forced concessions in the price of ore from some mines that do not control their Lake transportation facilities.

The production of coke and anthracite pig iron in the first five months of 1916 showed an increase of 66 per cent over that of the corresponding period in 1915, and prices are from $5 to $7.25 per ton higher, or 33 to 40 per cent above those in June, 1915.

Prices for steel bars and beams have increased 100 to 130 per cent over those of a year ago, and if conditions are not adversely affected by miners' strikes now threatening and if the present strong demand for iron and steel continues, the total ore output from the Lake Superior region may possibly reach 60,000,000 gross tons.

Birmingham and other iron districts are not capable of such rapid increases in output as the Lake districts, and if 10,000,000 tons be estimated for the production of all other districts it indicates a possible total domestic production of iron ore of 70,000,000 gross tons for 1916. At any rate, there are good indications that a new high record of iron-ore production will be made this year.

GRAPHITE PRICES SHOW INCREASE DURING 1915

Madagascar graphite was imported in 1915 in considerably larger amounts than in 1914, according to data secured by the United States Geological Survey. The price c. i. f. New York increased from about 6 cents per pound at the beginning of the year to 11 or 12 cents at the end of the year. There was no notable change in the character of the graphite as compared with 1914; it averaged about 85 per cent graphitic carbon, was not subdivided into grades and required finishing in this country before utilization. Most of it has entered the manufacture of crucibles. The scarcity of bottoms and the increasing demand in France for the Madagascar product makes it impossible at present for American firms to secure as much of this product as they desire.

The price of Korean graphite early in 1915 was about $25.00 per ton c. i. f. New York. As a result of increased marine freight rates and the scracity of bottoms the price in New York rose to about $40.00 per ton at the end of the year and $50.00 in March, 1916. Some of the material has come by rail from Seattle to the Atlantic Seaboard. The Japanese government has required no guarantees from consumers in regard to the utilization of this graphite. Korean graphite is amorphous, analyses 80 to 85 per cent graphitic carbon, and is used mainly for stove polishes, foundry facings, paint pigment and the prevention of boiler scale.

The unsettled conditions in Mexico resulted in greatly reduced importations of Mexican graphite in 1915 as compared with 1914. The better grades of this graphite suitable for pencil manufacture normally bring 4 to 5 cents per pound c. i. f. New York. Late in 1915 the price rose to 5 to 6 cents per pound.

The better grades of American flake graphite sold in large lots at the mines in the Eastern United States at from 6 to 8 cents per pound and in New York City at from 8 to 10 cents per pound. Small lots sold as high as 14 to 18 cents per pound in New York. Market conditions were reported by most producers to be very good.

Almost the entire Canadian production of graphite was imported into the United States, where it sold for about the same prices as the very similar American flake graphite. The imports were much larger in 1915 than in 1914.

GOVERNMENT EXPERTS WELL KNOWN TO MINING MEN

Photo by Harris & Ewing

SIDNEY PAIGE
Geologist

Sidney Paige is one of the few members of the Geological Survey who is a native of Washington, D. C. His early education was acquired in the public schools here. Later he did two years' work at the University of Michigan, but did his graduating work at Yale. Previous to joining the Geological Survey in 1902, he spent two years with the Isthmian Canal Commission in Nicaragua. Some years later he spent three months in Panama doing geological work under the direction of the Panama Canal Commission.

For six summers Mr. Paige did work in Alaska. He visited nearly every placer district of prominence in that territory. In addition he has done geological work in the quartz mining regions and has made some study of Alaskan coal.

Mr. Paige made a detailed investigation of the mineral resources and the geology of the Llano-Burnette area of Texas. He also spent considerable time at Silver City, N. Mex., in studying the important mining regions in that vicinity. He is the author of the Silver City folio which was published by the Geological Survey recently.

Perhaps the most important work done by Mr. Paige was his investigation of the pre-Cambrian geology of the Black Hills. During this work he discovered interesting facts regarding the Homestake ore body. Last year Mr. Paige devoted to the copper deposits of Burro Mountain district in the vicinity of Tyrone, N. Mex.

On July 1, Mr. Paige assumed the duties of chief of the section of western areal geology with supervision of the parties doing general geologic work in the Western States.

EVERY UNDERGROUND WORKER WILL BE SKILLED FIRST-AID MAN IN TEN YEARS, IT IS PREDICTED

With regard to the Bureau of Mines and its first-aid movement, the *Journal of the American Medical Association* in a recent issue prints the following letter from F. E. Clough, M.D., of Lead, S. D.:

"In connection with the propaganda for the spread of the First-Aid Movement, which is now being fathered by a Committee of which Dr. Joseph C. Bloodgood of Baltimore is the chairman, practically no credit has been given to the most active agent in this field—the United States Bureau of Mines.

"For a number of years the Bureau of Mines has had specially trained groups of men living in cars equipped to fight mine fires and other mine catastrophes stationed at stragetic points throughout the country. From time to time these cars travel to all the mining districts, and when not engaged in fighting fires, give instruction on First Aid to the injured and in the use of the different forms of breathing apparatus to be worn in case of mine fires.

"After thoroughly training many different groups in a State it is the custom of the Bureau of Mines to hold a contest in which these different teams participate. For the past three years the teams winning these State Contests have participated in a National First Aid Meet in which suitable prizes are given. Last year at the Annual Nation-Wide Contest held by the Bureau of Mines at San Francisco, teams came from practically every mining State in the Union and from Alaska as well. So widespread has this movement become in the mining world that, almost without a single exception, every up-to-date mining company is devoting much time to training their men in this line. This spirit has become generalized only through the teaching of the Bureau of Mines. We are of the opinion that in less than ten years hence every underground worker in the United States will be compelled to become proficient in the handling of injured men.

"I have been connected with mining hospitals for some time, and never having belonged to the Bureau of Mines, am offering this testimony to show, from the standpoint of a mining surgeon, what a potent factor in the First-Aid Movement the United States Bureau of Mines has been from the earliest days of this movement."

UNPRECEDENTED ORE SHIPMENTS BLOCK RAILROADS TO UTAH SMELTERS

State Is Producing Copper at Rate of 225,000,000 Pounds for the Year—Utah Copper Company Is Treating 34,000 Tons of Ore Daily—Silver Production Makes Big Gain Over Last Year

The high prices of metals during the last six months caused Utah producers to put all available miners to work getting out ore. In some of the snow-bound camps large quantities of ore were stored during the winter months and when this was released to the buyers a curtailment was requested by the smelters of all producers exceeding contract limits. During May and June hundreds of cars of ore, waiting to be unloaded, blocked the railroad lines to sampler and smelters. Much of the ore is stockpiled, as it is impossible to treat more than a certain quantity on account of the limited working capacity.

Reports received by the U. S. Geological Survey from its field office at Salt Lake City indicate that no great increase in gold may be expected for 1916, but silver production, which is dependent largely on the production of lead, has gained over previous years, principally from Bingham. The lead output from ores produced at this camp will exceed all former totals.

At the present rate of output, fully 225,000,000 pounds of copper will be produced in 1916, this estimate having been made from the increased tonnage being treated at the concentration mills near Garfield. The Utah Copper property mined and shipped in May 911,000 tons of ore, and during June, the rate of output was greatly increased, and about 34,000 tons of ore was treated daily. Other copper mines are producing to the capacity of their equipment. At the increased rate of production and higher price, the total value of the copper output will probably be double that of 1915.

Zinc production from sulphide concentrate and oxidized and sulphide ores will not largely exceed the 1915 output of 22 million pounds, estimated as spelter, Park Ciy, Bingham, Tintic, and Promontory district were the principal regions producing.

Among the metallurgical improvements is the establishment of sulphuric acid works at Garfield and the prospect for treating lower-grade copper ores by leaching. At Silver City, in the Tintic district, the chloridizing leaching plant has made its third shipment of silver precipitates, and the process is now considered a success.

SAFETY ASSOCIATION'S BULLETINS PLEASE WORKMEN IN MINE

A splendid outlook for the work being conducted by the mining section of the National Safety Association is seen by H. M. Wolflin, mine safety engineer, of the Bureau of Mines.

Mr. Wolflin attended the recent meeting of the executive committee of the National Safety Council, which formulated the program for the council meeting to be held in Detroit October 17-20.

The executive committee of the council consists of H. M. Wilson, chairman; B. F. Tillson, of the New Jersey Zinc Company; H. G. Davis, of the Delaware, Lackawanna & Western Railroad; C. E. Pettibone, of the Pickands-Mather Company, Cleveland, Ohio; W. A. Luce, of the Ellsworth Collieries Company; J. W. Paul, formerly mine safety engineer of the Bureau of Mines; R. Dawson Hall, of *Coal Age*, and Mr. Wolflin, who is secretary of the council.

Mr. Wolflin is of the opinion that the mining section is filling a want which was not being met before in supplying safety bulletins of interest to the workmen in mines.

Members of the safety council noticed that there were a great many publications of interest to the technical men, but very little that would appeal to the miner himself. As a result, the publication of these bulletins was begun. They are so arranged that pictures tell the principal stories. The popularity of these bulletins is indicated by the very large demand for them.

JEFFREY MANUFACTURING CO. REOPENS SEATTLE OFFICE

The Jeffrey Manufacturing Company, of Columbus, Ohio, announces the reopening of their northwestern branch office at Seattle, Wash., and the appointment of Percy E. Wright, Consulting Mechanical Engineer, as District Manager for Oregon, Washington, Alaska, British Columbia and Alberta. Mr. Wright, who has been in the Northwest since 1910, and whose connection with this company dates back to 1902, has had a wide and varied experience and training in the handling of the Jeffrey Line in the Engineering, Construction, and Sales Departments, working in solving elevating, conveying and transmission problems.

ARIZONA PRODUCING COPPER AT RATE NEARLY DOUBLE THAT OF ANY OTHER STATE

If Pace Set During First Six Months of 1916 Is Kept Up State Will Have Output for Year of 600,000,000 Pounds of Copper—Inspiration Plant Supplying One-fourth of State's Copper—Great Activity Being Shown in Gold and Zinc Mining

The mines and smelters of Arizona have been working at a pressure so high in 1916 that they are probably making record productions of all metals. If they continue to work at the present rate during the year they will make an output of over 600,000,000 pounds of copper, against about 450,000,000 in 1915, according to reports received by the U. S. Geological Survey from Victor C. Heikes, of the Salt Lake Office. A corresponding increase in the output of the precious metals and an increase in that of lead and zinc, which is probable will, at the greatly increased prices, make the total value of the output in 1916 nearly double that of 1915, which was about $88,000,000. Thus Arizona not only retains first place as a copper producer, but is producing at a rate nearly double that of any other state. Aside from a general effort to take advantage of an unusually active market, several factors have aided this increase, such as the settlement of the strike at the Clifton-Morenci mines in January. The International smelter, which treats Inspiration ore, contributes the greatest part of the increase, for this plant is supplying about one-fourth of the total copper. Marked increases and improvements were made at the United Verde, Miami, Calumet and Arizona, and Old Dominion mines, and the Sasco plant in Pima County was again blown in. The railroad to Ajo was completed and work has been begun there on a 4,000 ton leaching plant.

There is great activity in the production of gold, especially in Mohave County, and the high price of zinc has stimulated production at the Tennessee, Union Basin and Kingman zinc properties. The mill at the Union Basin mine was enlarged, and work at the San Xavier mine in Pima County was resumed.

DEMAND FOR CEMENT CONTINUES DESPITE INCREASING PRICES

The first half of 1916 has been a busy period for the Portland cement industry in most parts of the United States. Labor troubles have caused the temporary shutting down of a few plants in Illinois, and the business ordinarily taken care of by these plants has gone to others in the Central States, but none has been reported as having voluntarily closed in 1916.

The opening of a new cement plant nowadays, when the country is so well dotted with plants, is an event of importance, and the fact that two new ones have begun operations is of considerable interest. Both of them are in the Middle West, one at its extreme north, at New Duluth, Minn., the other at its extreme south, at Houston, Tex. The location of both was influenced more largely by commercial considerations than by the proximity of raw materials. The plant at New Duluth, a mill of the Universal Portland Cement Company, utilizes limestone brought by boat from the shore of Lake Huron near Alpena, Mich., and slag from the blast furnaces of the Minnesota Steel Company at New Duluth. The plant at Houston is Mill No. 2 of the Texas Portland Cement Company. It manufactures cement from oyster shells dredged from a reef in Galveston Bay and clay from Harrisburg, Tex. This plant is on tidewater, and efforts will be made to establish for it an export trade with South America.

In 1914 and 1915 there was a decrease in the production of cement, consumers exercising strict economy in its use, but the year 1916 shows a reaction, having opened with a demand unprecedented for a midwinter season. Prices, which had averaged only 86 cents a barrel for the entire year 1915, began to rise toward the end of that year and in the Eastern and Middle States, where cement sold at 70 to 90 cents a barrel, they continued to rise in 1916 until, in June, they ranged from $1.10 to $1.25 a barrel. The increased prices, of course, do not mean an equivalent net increase in returns to the manufacturers, for the costs of explosives for blasting and of coal have both risen, and laborers are in many places demanding an increase in wages. These comparatively high prices have not, however, checked the demand for cement. Many manufacturers are selling all they can produce, and others are even drawing on stocks so as to fill orders promptly.

Although no statistics have been reported to the United States Geological Survey at this date, it is believed that the total output of Portland cement for the first half of 1916 has considerably exceeded that for the corresponding period of 1915. In general an optimistic feeling prevails among manufacturers, and it is confidently predicted that the year will show a gain over 1915, both in production and shipments of Portland cement. Moreover, there is a fair possibility that they will exceed those of 1913 and thus establish a new record.

LORDSBURG DISTRICT DOUBLES ITS PRODUCTION OF COPPER-GOLD ORES

New Mexico Camp Makes Fine Showing, Mid-Year Estimate of Geological Survey Shows—State Shows Appreciable Increases in Lead, Copper and Zinc Production During First Six Months of the Current Year

The mines of New Mexico during the first six months of 1916 show small increases for gold and silver and appreciable increases for lead, copper, and zinc, according to Charles W. Henderson of the United States Geological Survey.

In the Mogollon district, Socorro County, which in 1915 produced 40 per cent of the gold and 65 per cent of the silver output of the State, the Fanney and the Last Chance cyanidation mills were operated continuously, and the Cleaveland-Weatherhead mill, idle in 1915, was placed in operation in April. Gold bullion and concentrates continued to be shipped from the Elizabethtown district, Colfax County, and gold bullion from the Whiteoaks district, Lincoln County. The output of silver was affected considerably by the idleness of the Cossak cyanidation mill, in the Cochiti (Bland) district, Sandoval County. Gold-copper ore continued to be shipped from the Orogrande district, Otero County. The purchase by the Phelps-Dodge Company of a large area in the Organ Mountain district, Dona Ana County, promises a future production of all five metals. Siliceous and copper ores carrying gold were shipped from the Lordsburg district in quantities that indicate an output nearly double that of 1915. The Santa Fe Gold and Copper Co.'s matting plant at San Pedro was operated continuously. The Burro Mountain Copper Co.'s flotation mill in the Burro Mountain district was placed in operation in April, 1916. The Chino Copper Co.'s mill, which in 1915 produced concentrates containing 68,293,893 pounds of copper, yielded during the first quarter of 1916 a total of 16,267,450 pounds, the total quantity of ore treated for the three months being 714,400 tons, an average of 7,850 tons a day, the highest average tonnage treated by the mill since it began operations. Shipments of copper from the Magdalena district increased. Lead ore was shipped from Cooks Peak and Tres Hermanas districts, Luna County; from the Central and San Simon districts, Grant County; and from the Magdalena district, Socorro County. Increased shipments of zinc carbonate and zinc sulphide concentrates were made from Magdalena, Hanover, Cooks Peak, Florida, Tres Hermanas, and Pinos Altos districts. A mill was erected in the revived Steeplerock district, Grant County, and some shipments were made.

Tantalum Difficult to Analyze.

There is no simple and accurate test for tantalum. One of the indicative tests is the specific gravity which is always high. The ordinary tantalum minerals, columbite, or tantalite, as it is known when it is almost pure manganese iron tantalate, is black or nearly black and has a specific gravity ranging from 6 to 8.2 depending on the quantity of tantalum present. Tantalum and columbium are almost invariably present in the same mineral and if the columbium is in large quantity the specific gravity is lowered. The streak and color are almost black, but are probably browner if much manganese is present. Columbite is insoluble in acids but if fused with soda the fusion is decomposed by hydrochloric acid, giving a white, curdy precipitate. On adding metallic zinc to the solution a blue color is given which disappears on dilution with water. This test, however, merely proves the presence of columbium. The presence of tantalum can only be proved by careful chemical work. Another indication of the possibility of the presence of tantalum is the occurrence of the mineral. Tantalum minerals are known to occur in quantity only in pegmatites, though small quantities of the mineral are found in certain veins, such as the tin vein of Cornwall and small quantities of tantalum and columbium oxides (up to 2 per cent) are found in certain tungsten minerals from some localities.

Du Ponts Issue Booklet

Many features about the latest booklet published by the du Pont companies of Wilmington, Del., are unique. The little volume is devoted to very readable information in regard to du Pont products. It is another evidence of the presence of a high percentage of "live wires" in the management of this concern. The book is bound in fabrikoid, which is the du Pont substitute for leather, and contains a variety of cuts. It is a valuable possession.

J. D. Pardee, of the Geological Survey, has gone to Montana, where he will make a reconnoissance of the mining district in the Phillipsburg region. He will also make some examinations for the classification of phosphate lands.

GOVERNMENT EXPERTS WELL KNOWN TO MINING MEN

Photo by Harris & Ewing

H. M. WOLFLIN
Mine Safety Engineer, Bureau of Mines

H. M. Wolflin received his elementary education in the common schools and high schools of California, Texas and Arizona. He was graduated from the University of Arizona with the degree of Bachelor of Science in 1907. He returned the following year and was graduated with the degree of B. S. in Mining engineering. In October, 1908, he entered the Technologic Branch of the United States Geological Survey as Junior Engineer. He was engaged for a time at the Pittsburgh, Pa., station with the physical testings of explosives and then transferred to the field work of the mining division, where he was engaged in mine safety investigations and coal sampling in West Virginia, Pennsylvania, Ohio, Washington, and British Columbia, until he was placed in charge of the newly established Mine Rescue Station in Seattle, Wash., early in 1910.

He was made district engineer of the Bureau of Mines in the Northwest when the Bureau was established, and had charge of mine rescue car No. 5 and the Seattle station, though most of his time was spent on safety investigations in the coal and metal mines of the district.

He was given leave of absence to attend Columbia University for a year and was graduated from the School of Applied Science in 1913 with the degree of Master of Arts; after which he was given the problem of investigating metal mine ventilation for the Bureau and worked at this until January, 1914, when he was placed in charge of the cooperative work between the Bureau of Mines and the Industrial Accident Commission of the State of California. He was successful in organizing this work and in securing the cooperation of the mine operators, who were at first strongly opposed to interference of the State and Federal officials in their affairs.

A survey of mining conditions was made through the State of California, after which mine safety rules were prepared by a committee composed of three mine operators, three miners and Mr. Wolflin. These rules were adopted by the Industrial Accident Commission and put in force on January 1, 1916. The Commission has authority to enforce such rules almost as vigorously as laws can be enforced.

Mr. Wolflin was then promoted to the position of Mine Safety Engineer of the Bureau of Mines and was transferred to Pittsburgh, Pa., to take charge of the Mine Safety Investigation of the Bureau, including its mine rescue and first-aid work.

Mr. Wolflin is a member of the American Institute of Mining Engineers, the American Mining Congress, San Francisco Engineers Club, etc.

Adoph Knopf, of the United States Geological Survey, is making an investigation of tin deposits thirty-five miles north of Battle Mountain, Nevada. Before returning to Washington he probably will be assigned other geological work in the same general region.

E. C. Eckles, formerly of the Geological Survey, but now engaged in private practice in Washington, also was a member of the Fort Oglethorpe camp.

B. S. Butler is making some special examinations of the cottonwood district of Utah in the interest of the Geological Survey.

J. S. Diller, of the United States Geological Survey, has been called to Lassen Peak, Cal., by the renewed activities of that volcano. Dr. Allen, of the Carnegie Geographical Laboratory and Dr. David T. Day, of the Bureau of Mines, also have gone to investigate this interesting example of vulcanism.

Ralph Arnold, a geologist of Los Angeles, formerly with the United States Geological Survey, was in Washington last month en route to Venezuela. He will do geological work in connection with the General Asphalt Company's oil developments.

MONTANA'S METAL OUTPUT IN 1916 PROMISES TO EXCEED $140,000,000

First Six Months of the Year Indicate that Record-Breaking Output of Last Year Will Be Exceeded Greatly This Year—Output of Copper Promises to Reach 350,000,000—Anaconda Is Averaging 26,000,000 Pounds a Month

The unusually high prices of metals in 1916 have stimulated mining to a marked degree in Montana, especially at Butte. At the present rate of production, there will be notable increases in the output of all metals, and a marked increase in the total value of the output. According to reports received by the United States Geological Survey from its Salt Lake representative, V. C. Heikes, the output is now being made at a rate which will give a total value of about $140,000,000 to the year's metals instead of about $87,000,000, the value in 1915. The production of gold from precious metal bullion is showing a large increase and will be augmented by gold from a much greater output of copper ore. The production of silver will doubtless keep pace with that of copper and with the increased output of zinc.

The production of copper, though below the normal in January and February, has been increased toward the middle of the year by both the Anaconda and East Butte companies. This gain indicates that the output of copper for the year may be 350,000,000 pounds against 275,000,000 pounds in 1915. The East Butte mine was averaging 1,300,000 pounds a month the first five months and the Anaconda about 26,000,000 pounds a month, with a better rate in April and May. The latter company has been busy remodeling its big concentration plant at Anaconda and constructing a zinc plant, as well as building a new refinery at Great Falls.

An increase of about 30 per cent in the output of zinc during the year is indicated. For the first quarter of 1916 the Butte and Superior mine produced nearly 48,000,000 pounds of gross zinc in concentrates, or at the rate of 192,000,000 pounds a year. The Elm Orlu mine has also increased shipments of zinc concentrates to about 5,000 tons a month and may increase this rate. The lead production will probably be increased because of the great amount of concentrates derived from lead-zinc ores. High prices of metal have given better wages and unusual profits, and may result in record outputs of all metals.

MILLION YEARS SMALL UNIT IN CALCULATING GEOLOGIC TIME

Geologic time has been so long that years and centuries do not count at all, as even the minor episodes lasted thousands or tens of thousands of years. The age of the older stratified rocks runs into millions of years, and in estimating their age it is hardly safe to use a smaller unit than a million years and the margin of error in such an estimate is probably several million years.

A year is too small a unit for such measurements and there is no means of comparing it directly with the quantity to be measured. The problem is similar to that which confronts the man who stands looking down many miles of track and tries to estimate the number of ties in that distance by counting the few ties in sight. He can see a few score of them, but farther on they are indistinguishable and still farther the track itself narrows to a vanishing point, yet he knows there must be thousands of ties in the stretch of track that he can see. Perhaps miles down the track is a building and from its apparent size he can guess how far away it is and thus estimate, within a few thousands, the number of ties between him and the building. Geologists have to do the same thing. They know the rocks must be millions of years old, for during the few centuries of human experience the addition to the thickness of the stratified rocks has been very slight, and they have a few landmarks which help them to estimate how many millions, but not more close than that.

The age of the glacial deposits can be estimated more closely, as they lie, figuratively speaking, about at that point on the track where the ties begin to appear to merge and to be indistinguishable. We have several criteria, such as the rates of recession of Niagara Falls, of building forward of certain deltas, and of wearing away of the coast, which enable us to estimate rather closely, geologically speaking, how long ago the Wisconsin ice melted off the northeastern United States. This date is generally set at from 20,000 to 35,000 years ago. The moraines of northeastern Rhode Island were formed while the ice still lay over northern New England and are a few thousand years older. Their age is probable somewhere between 30,000 and 60,000 years.

J. C. Hibben, of Parsons, Kans., has been spending several days in Washington on business.

GOVERNMENT EXPERTS WELL KNOWN TO MINING MEN

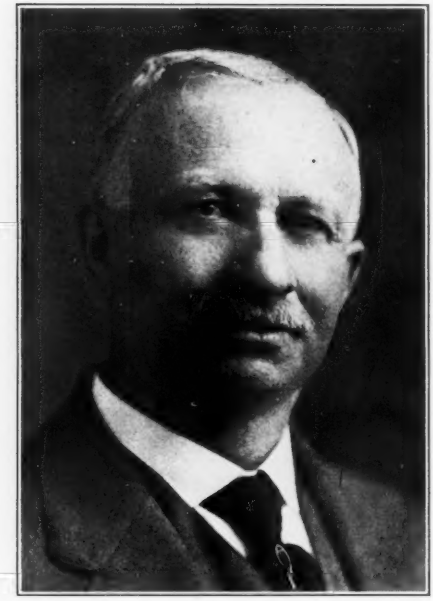

Photo by Harris & Ewing

FRANK C. SCHRADER
Geologist

Frank Charles Schrader was born in Sterling, Ill. He received his early education in the public schools of that city. Later he attended the University of Kansas and was graduated from that institution in 1891 with the degree of A. B. He then went to Harvard, where he was graduated with the degree of A. M. in 1894. During the two years that followed he taught geology at Harvard and then came to the Geological Survey and has been with that bureau continuously since. Mr. Schrader has an acquaintance with mining men in the United States as extensive as has any man in the government service. Following is a brief sketch of the work that he has done in the metal mining regions of continental United States and Alaska:

Mr. Schrader was a member of the Geological Survey party which went into Alaska over the Chilcoute Pass and camped on the site of the Klondike gold field which was discovered a little later the same year. Since the Klondike is on Canadian territory they made no examinations there, although they were aware that there was some gold in that region. The party, of which Mr. Schrader was a member, crossed into American territory and made studies at Forty-Mile Creek, Eagle Creek and Birch Creek, which were the main mining camps in that part of Alaska in 1896. It was while they were engaged in this work that the first report of the remarkable discoveries in the Klondike reached the party of geologists. Every man in the party was able to withstand the tremendous temptation to throw up the government work and take his chance in the new gold region. Equipped with their knowledge of mining and geology there is little question that many of the members of this party could have been able to locate valuable properties. They were so near the scene of the strikes that they could have been among the first on the ground, but rather than be disloyal to the trust that had been placed in them by the government, the geologists did not allow the Klondike fever to interfere with their work.

The following year, which was 1897, Mr. Schrader was engaged in geological work at Silver City, Delamar and Seven Devils, Idaho. He also made an examination of certain regions in the Chiracaucau Mountains in Arizona.

In 1898 Mr. Schrader was detailed as a geologist to the United States Army expedition which made an inspection of the Copper River district of Alaska. He was in charge of a part of the expedition while in the interior. His party went over the Valdez Glacier with pack trains, and came down the Copper River.

An adequate appropriation was furnished the Geological Survey in 1899 for the continuance of the Alaskan work and Mr. Schrader was put in charge of the party which investigated the geology of the Arctic slope of Alaska along the Chandlar and Koyukuk Rivers.

In 1900 Mr. Schrader was sent back to the Copper River. Some detailed investigations were made necessary by the number of mineral deposits that were being opened.

One of the most remarkable trips ever taken by a Survey party was that of 1901, when Mr. Schrader and other geologists made an investigation of the region bordering on the Arctic Ocean. The party went in via the Yukon and dog-sledded from White-Horse to Bergmann, which is above the Arctic Circle. As soon as the ice broke up the party ascended the John River to its head and portaged over the mountains and descended the Anaktuvuk River to the Arctic. After extensive reconnoissance they decided to make the ocean trip down the coast to Nome. The trip was started in canoes and Eskimo boats of walrus skins, but later at a settlement they were able to buy a whale boat, in which they finally reached Nome.

An interesting incident took place a few days after the party arrived at Nome. An incoming ship was sighted from the harbor, but owing to a storm which was in progress it was impossible for it to make port. Through glasses it was seen that the ship's flag was flying at half-mast. News of the

attack on President McKinley had reached Nome and it was taken for granted that the half-masted flag on the ship indicated that the President had died. With no other evidence than this a memorial service was held in the town hall, which was attended by practically every resident of Nome. Several days later, when the boat was able to dock it was ascertained that their surmise had been correct.

In 1902 Mr. Schrader was sent back to the Copper River and confined his work largely to the study of the geology of the upper regions of the Copper and Tanana Rivers.

During the several years spent in Alaska Mr. Schrader became acquainted with a large number of operators in the mining districts of that territory. Since 1902 his work has been confined to continental United States.

In 1904 he made a geological investigation of the oil and gas fields in the Independence quadrangle in Kansas. He also did similar work in Oklahoma. In 1905 he worked in the Durango-Gallup district of Colorado and New Mexico and studied the copper deposits in the Zuni and Nacimiento mountains in New Mexico.

In 1906 and 1907 he studied the mineral deposits of the Mohave Country in Arizona. In 1908 his work was confined to the Libby, Nine-Mile Creek and Thompson Falls district of Montana, and the Wallace district of Idaho. In 1909 he did field work in Santa Rita and Patagonia districts in southern Arizona, and in the Clear Water District of Idaho.

The whole field season of 1910 he spent in the Jarbidge region of the Elk Mountains of Nevada.

During the three years following most of Mr. Schrader's attention was given to the mining regions of Nevada. He has made careful studies at Wonder, Rawhide, Bobard, Goldfield, Antelope, Rochester, Fairview, Bernice and Alpian districts. He also made an examination of the Wind River district of Wyoming.

Last year Mr. Schrader made an extensive trip in Colorado, during which he made geology studies in the Durango, Leadville, Cripple Creek and other districts.

He has been chief examiner of the properties and a witness in important mining cases in the Federal Courts of New York, Chicago, Denver, Spokane, Santa Fe and elsewhere.

UNITED STATES INCREASES AMOUNT OF HIGH-GRADE ASBESTOS MINED

The United States marketed a domestic production of 1,731 short tons of asbestos in 1915, valued at $76,952, according to the U. S. Geological Survey. As compared with the production of 1914, this represents a gain of 484 tons, or 39 per cent, in quantity, and of $57,987, or 306 per cent, in value. The great increase in value was due to the high grade of the material produced.

The producing States were Georgia, Arizona, and California. There were three important producers, two in Georgia and one in Arizona, besides several small producers in California. Georgia had much the larger production, a gain of 22 per cent in 1915 over 1914, but yields only mass fiber of the hornblende variety, which is relatively of low grade, cannot be spun, and is practically all milled to one grade suitable for use in the manufacture of fireproof material. Arizona produces chrysotile only of the cross-fiber type and of spinning grade. The production of Arizona in 1915 was more than 10 times the quantity produced in 1914, and this accounts for the much greater increase in value than in quantity, as compared with the total output for 1914.

The average annual production of asbestos in the United States (for the last 26 years) from 1890 to 1915, inclusive, has been 1,470 short tons, ranging from a minimum of 50 tons in 1893 to a maximum of 7,604 tons in 1911. In 1911 and 1912, when there was a large production in Vermont, the total value of the output exceeded that of the production in 1915. But on account of the high grade of the Arizona asbestos the average value per ton in 1915 was $44.46, against $15.77 and $19.98, respectively, in 1911 and 1912.

ASBESTOS MINING IN ARIZONA HAS PROMISING FUTURE

The asbestos industry of Arizona is developing steadily, according to information reaching the U. S. Geological Survey. Production began in 1914 and increased more than tenfold in 1915. The Arizona Asbestos Association is the only producer.

The shipments have all been as No. 1 crude, and in the mining a large tonnage of milling rock of shorter fiber has been accumulated. A small experimental mill has been erected and a road completed to the mine, where more than 4,000 feet of tunnels have been developed in the canyon walls. Shipments are said to average a ton a day, going out on burros to Globe and to Rice on the Arizona Eastern Railroad.

The success of the Ash Creek mine has greatly encouraged prospectors, and many claims, estimated at approximately 500, have recently been taken up.

Arizona is a promising asbestos field, and, with the development of greater facilities for transportation, the output is destined to be much larger than now. The high grade of the material will always keep it in lively demand, especially for use in electrical appliances. The method of mining is in strong contract to that of Canada, where open-quary methods obtain. Notwithstanding the active development of the asbestos interests in south-central Arizona, there has been but little activity in the Grand Canyon region, where this valuable asbestos was first discovered.

Current Federal Legislation

During the present session of Congress 22,946 bills have been introduced; 16,534 of these were presented by members of the House and 6,412 by Senators.

The following bills of interest to the mining industry have been introduced during the last month:

S. 6230, by Mr. Chamberlain. This bill provides for the creation of a Council of Executive Information for the Coordination of Industries and Resources for the National Security and Welfare, which is to consist of the Secretary of War, the Secretary of the Navy, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce and the Secretary of Labor. The bill provides that the Council of Executive Information shall nominate to the President, and the President shall appoint, an advisory commission consisting of not more than seven persons, each of whom shall have special knowledge of some industry, or the development of some natural resource, or be otherwise specially qualified, in the opinion of the council to perform the duties prescribed. The members of the advisory commission shall serve without compensation, but allowed actual expenses of travel and subsistence when attending meetings of the commission or engaged in investigations pertaining to its activities.

It shall be the duty of the Council of Executive Information to supervise and direct investigations and make recommendations to the President and the heads of executive departments as to the locations of railroads with reference to the frontier of the United States so as to render possible expeditious concentration of troops and supplies to points of defense, the coordination of military, industrial and commercial purposes in the location of extensive highways and branch lines of railroad, the mobilization of military and naval resources for defense; the increase of domestic production of articles and materials essential to the support of armies and of the people.

The sum of $200,000 a year is appropriated to carry on the work outlined in this bill.

S. 6308, by Mr. Ashurst. This bill authorizes the Secretary of the Interior to lease, for production of oil and gas, ceded lands of the Shoshone or Wind River Indian Reservation in the State of Wyoming.

S. Res. 217. By Mr. Hitchcock. The resolution reads as follows:

Resolved, That the Federal Trade Commission be, and it is hereby requested to make an immediate investigation into the operations and accounts of the leading companies producing anthracite coal, for the purpose of ascertaining the facts concerning the recent increase in the price of anthracite coal, and report the same to the Senate during the present session of Congress, if possible.

Resolved, That the commission be requested to include in its report a showing of the relation between the cost of labor and the price of anthracite coal prior to said increase and at the present time.

The resolution was passed by the Senate.

S. 5992, by Mr. Pittman. This bill permits the Secretary of the Interior to grant permits to corporations to remove timber from the public domain for mining and domestic purposes in other States than those in which such corporations are incorporated.

S. 3444, by Mr. Martine. Authorizes the Secretary of Agriculture to investigate and report to Congress the expediency of having the Government set apart a tract of land in the District of Columbia to permit each State and territory to construct and maintain a building for the installation of a permanent exhibit of its resources. This bill has been favorably reported by the Committee on Industrial Expositions.

H. R. 407 has been passed by the house and reported favorably by the Senate Committee on Public Lands.

This bill, as amended, provides for stock raising homesteads of 640 acres of such lands as shall be designated by the Secretary of the Interior as "lands the surface of which is, in his opinion, chiefly valuable for grazing and raising forage crops, do not contain merchantable timber, and are not susceptible of irrigation from any known source of water supply."

All entries must be on "unreserved and unappropriated public lands" and patents under this act "shall be subject to and contain a reservation to the United States of all the coal and other minerals in the lands so entered and patented, together with the right to prospect for, mine and remove the same.

"The coal and other mineral deposits shall be subject to disposal by the United States in accordance with the provisions of the coal and mineral land laws in force at the time of such disposal."

Any person qualified "shall have the right at all times to enter upon the lands entered or patented, as provided by this act, for the purpose of prospecting for coal or other minerals therein," being liable to the entryman for all damage to the permanent improvements or crops.

(It may well be questioned whether the words "unreserved and unappropriated" will protect an entryman in possession of a mining claim at the time the stock-raising homestead filing is made.—*Ed.*)

Owing to the coming of the conventions of the

political parties last month, there was little work done in Congress during more than half of the time since the last issue of the JOURNAL. In contrast with the lack of activity earlier in the month both Houses are now working under the greatest pressure. The appropriation bills have right of track over other legislation. The administration's program is certain to come next in order. The chances for many important bills being reached is growing less and less.

For weeks Senator Myers, of Montana, chairman of the Public Lands Committee of the Senate, has been bringing all pressure within his power to bear upon the Senate in an effort to secure consideration of the so-called oil land leasing bill. The name by which this bill is commonly called is a misnomer to the extent that it does not mention the various other minerals which are included in the bill in addition to oil. Coal is not included in this bill but Senator Myers has another bill covering it. This bill is not nearly so far advanced as is the oil land leasing bill. It still has to pass through the committee stage.

Senator Myers had hoped to effect an arrangement whereby the oil land leasing bill could be taken up in the near future but as the month closes he is not sanguine as to the bill's chances for early consideration.

No bills were referred to the Senate Committee on Mines and Mining during the month. No meeting of the committee was held.

With the exception of some slight progress by the sub-committee of the House Committee on Mines and Mining, which is considering H. R. 175, a resolution by Mr. Randall, of California, looking to conservation of coal lands, nothing has been done during the month by the House Committee on Mines and Mining. The question of a revision of the mining laws continues to be the subject of most interest on the House side of the capital. Letters in regard to this subject continue to reach Chairman Foster of the committee and Representative Taylor of Colorado. Mr. Taylor is preparing a statement on this question which will be published in the August JOURNAL. The legislative jam practically makes impossible any thought of action on the Foster bill at this session. Some members of the committee believe the bill should be pushed at this session but in the face of the opposition and the congested state of the calendar, it is practically certain that no action will be taken at this session.

H. R. 12544. Meeting in executive session, June 27, the House Committee on Indian Affairs decided to report this bill favorably. The amendments proposed by the four large coal mining companies that are mining in the segregated Indian lands were added to the bill.

Dorset Carter, president of the Folsom-Morris Coal Mining Company, and J. H. Hibben, who is with the M. K. & T. Coal Mining Company, appeared before the committee during the month and set forth in greater detail than had been done at any previous hearing, just the position of the coal mining companies which they represent.

At the last hearing Mr. Carter made it very plain he did not oppose or advocate the bill, but in case it is to be passed there are certain rights in which the coal mining companies should be protected. He declared that if the lands were sold that an individual purchaser might claim the same right of administration as is now enjoyed by the Interior Department.

It also was pointed out at the hearing that the people living in the five counties, which comprise the greater part of eastern Oklahoma, are very anxious that arrangements will be made whereby the coal and asphalt deposits in the Choctaw and Chickasaw reservations may be developed. It was shown that this area comprises 445,000 acres, and it was also admitted that the mining companies now engaged in mining in this region are better equipped to operate these mines on an economical scale than any others which might become interested.

Some of the opposition to this bill came from the desire to prevent Indian holdings being reduced to an easily convertible fund. In case their assets should be reduced to cash it then would be an easy matter, where a majority of the members of the committee favored it, to disburse this money. Other members of the tribe having claims against it, then would have nothing against which they could recover.

Owing to the extremely crowded condition of the calendar in each House the chances of the ultimate passage of this bill are not bright.

Bureau of Mines Publications

The Bureau of Mines just has issued the following publications:

Bulletin 92. The feldspars of the New England and North Appalachian States, by A. S. Watts. 1916 181 pp., 8 pls. 22 figs.

Bulletin 93. Miners' nystagmus, by F. L. Hoffman. 1916. 67 pp.

Bulletin 96. The analysis of permissible explosives, by C. G. Storm. 1916. 88 pp., 3 pls., 7 figs.

Technical Paper 122. Effects of atmospheres deficient in oxygen on small animals and on men, by G. A. Burrell and G. G. Oberfell. 1915. 12 pp.

Technical Paper 125. The sand test for determining the strength of detonators, by C. G. Storm and W. C. Cope. 1916. 68 pp., 2 pls., 5 figs.

Coal-mine fatalities in the United States, 1915, compiled by A. H. Fay, 1916. 80 pp., 3 figs.

Wood Tin in Place at Battle Mountain

The deposit near Battle Mountain is the only one known in the United States in which wood tin has been found in place. The Mexican deposits are apparently very similar to those near Battle Mountain.

GOVERNMENT EXPERTS WELL KNOWN TO MINING MEN

Photo by Harris & Ewing

GEORGE. S. POPE

In Charge of Government Fuel Inspection, Bureau of Mines

George S. Pope was born in Kane, Ill., 1881. His early education was secured in the public schools at Kane and Carrollton, Ill. After completing his public school course, he attended the University of Illinois for four years, where he specialized in fuel work. Since coming to Washington he has taken supplemental work along the same line at George Washington, University.

Mr. Pope was one of the first employes associated with the Government fuel-testing plant at St. Louis. After serving in this plant until December, 1906, he was summoned to Washington to assist in the inauguration of a system of purchasing coal for the Government under the specification method, and in establishing a laboratory for the analysis of coal. During the Jamestown exposition Mr. Pope was connected with the fuel-testing plant there. For the last six years he has been special engineer in charge of Government fuel inspection, which is a division of the work of the Bureau of Mines.

The Government purchases $8,000,000 worth of coal annually. Of this $7,000,000 worth is tested by the Bureau of Mines. He is chairman of the committee of the American Society for Testing Materials, which was appointed to draft standard specifications for purchase of coal. He is the author of a number of bulletins dealing with sampling and purchasing of coal.

THROAT TELEPHONE APPLICABLE TO WAR USES, IT IS DECLARED

Application of the throat telephone to military operations is urged in the following letter to George S. Rice, chief mining engineer of the Bureau of Mines:

"I may be taking liberties in writing you in regard to military matters. However, it is one in which I am very much interested. I am, therefore, writing you in regard to the application of the throat telephone used for rescue work to military purposes.

"There are a number of applications where the throat telephone with reel connection as designed and used by the Bureau, may be very serviceable. As an illustration, an observer posted close to the enemy's trenches for the directing of artillery fire must be in constant touch with the artillery. He must do this as quietly as possible so as not to betray his presence. The throat telephone and reel can be attached to his belt, and the reaching of his destination will be much simplified due to the light weight and principle of the reel. Communications can then be transmitted to the base without making distinct articulations, which would be an advantage. This is also applicable to transmitting the messages of men who are spying close to the enemy's quarters. The light weight of the reel will make it possible for a man to carry sufficient wire to go a long distance into the enemy's territory and report without opening his mouth.

"This telephone, having been developed by the Bureau, may be credited to the Bureau as a contribution to military science.

"At Springfield the Director advised me that he had been appointed to organize the mining engineers of the United States for preparedness, and with your approval, I would suggest that this be brought to his attention."

Dr. F. L. Ransome and Mrs. Ransome and Dr. Arthur C. Spencer and Mrs. Spencer were the guests of Dr. George Otis Smith, Director of the Geological Survey at a dinner at the University Club on June 9. The dinner was given in honor of the twentieth anniversary of the date on which the Drs. Smith, Ransome and Spencer took the first civil service examination ever given by the government for the position of geologist.

HOME INSPECTION MADE A PART OF WELFARE WORK AT UTAH PLANTS

American Smelting and Refining Company Names Miss Rose Korous to Advise with Housewives in Health and Sanitary Matters— Utah Prospectors May Have Samples Analyzed Gratis— Gemmell Becomes Director in Utah Copper Company

By A. G. Mackenzie

The American Smelting & Refining Company has established a system of inspection for the homes of its workers at its Garfield and Murray plants in Utah and has engaged Miss Rose Korous to have charge of the new work. Miss Korous resigned her position as supervisor of school nurses for the Salt Lake City Board of Health June 15 and will begin her duties with the company July 1. This action is an extension of the company's welfare work among employes and an important part of the duties of Miss Korous will be to advise wives of the company's workers regarding modern methods of sanitation and otherwise guarding the health of their families. She will also supervise the company's emergency hospitals.

TO ANALYZE ORES

The Utah Chapter of the American Mining Congress is planning to arrange, with the cooperation of the Utah State Conservation Commission and the State School of Mines, to assist prospectors of the State by giving them free qualitative analyses of mineral specimens, the determinations to be made in the laboratories of the State School of Mines. A special winter course for prospectors in metallurgy, mineralogy, geology and mining is part of the plan. It is not proposed to compete in any way with commercial chemists and assayers. The School of Mines will make merely qualitative tests of specimens and will advise the prospector whether his specimen contains mineral in commercial quantities and refer him to a commercial chemist or assayer for quantitative determinations. It is hoped to obtain valuable data regarding the location of the mineral resources of the State in connection with the plan as well as to assist greatly the development of the industry. It has been found that prospectors frequently discard specimens believed to contain valuable mineral because they do not desire to spend money for a test on an uncertainty. This is especially true with respect to the rarer minerals.

GEMMELL MADE DIRECTOR

Announcement was made in Salt Lake City, June 6, that R. C. Gemmell, general manager of the Utah Copper Company, had been elected a director of the company, and that John M. Hayes, assistant secretary and cashier, had been elected treasurer of the company. Mr. Gemmell is Governor of the Utah Chapter of the American Mining Congress, and Mr. Hayes is an active member of the Chapter's board of directors.

HELP TRAINING CAMP

Utah mining men are active in the preparedness movement in the State and are assisting materially in the preparations for the Citizens Military Training Camp, to be held at Salt Lake City, August 21 to September 16, 1916. Among well-known mining men who are assisting the movement are R. C. Gemmell, C. W. Whitley, Thomas Kearns and William Wraith, each of whom is a director of the Utah Chapter. Some of the leading companies have given employes the privilege of attending the training camp on full pay and individual mining men have made substantial cash subscriptions to defray preliminary expenses for the camp. Mr. Wraith is one of the Utah members of the Naval Consulting Board.

COAL OPERATORS MEET

The summer meeting of the Rocky Mountain Coal Mining Institute, composed of men engaged in coal mining in Utah, Colorado, New Mexico and Wyoming, was held at Salt Lake City June 14 and 15 with about 200 members and their families in attendance.

Visiting delegations were met at Castle Gate, Utah, the morning of June 13 by Utah members and the day was passed in an inspection of the important coal mines of Carbon County. The meeting at Salt Lake was addressed by Governor William Spry, of Utah; Mayor W. Mont Ferry, of Salt Lake City; J. E. Pettit, State Coal Mine Inspector for Utah; John McNeil, of Denver, and F. W. Whiteside, of Denver. Mr. Pettit's address was on "Safety First"; Mr. Whiteside's on "Explosives Used in Coal Mining," and Mr. McNeil's address was to young men engaged in the business, giving results of his observations and long experience in coal mining. Mr. McNeil was one of the first coal mining operators of Colorado and is still actively in the business.

Officers of the Institute are: A. C. Watts, of Salt Lake City, president; J. C. Roberts,

vice-president for Colorado; F. R. Weitzel, vice-president for New Mexico; A. H. Cowie, vice-president for Utah; W. D. Brennan, vice-president for Wyoming; F. W. Whiteside, of Denver, secretary-treasurer.

An enjoyable program of entertainment was prepared for the visitors.

The matter of including the states of the Northwest in the Institute was presented for discussion at the meeting and will receive further consideration at the annual business meeting of the Institute, which will take place in the fall.

That the prices of copper and zinc will remain around their present levels for a considerable period of time, due to the demand, and that silver will sell for higher prices, due to the increasing need of the world for hard money, were opinions expressed recently by D. C. Jackling, of the Utah Copper Company.

In discussing his impressions relative to the copper market, Mr. Jackling said:

"There is no question that in time copper prices will seek a normal level. For a long period, however, the prices of copper will follow the habits of that metal for the last two years, during which time the tendency has been upward. There is nothing of which I can learn that indicates a recession of prices. The metal will undoubtedly sell lower in the future, but that will not happen during the present year.

"There is a demand for all of the available output, with every reason to believe that this demand will continue throughout the year. I feel hopeful for very good copper prices for a considerable time in the future.

"Zinc is practically in the same position as copper. The same thing can be said regarding the demand for that metal, and, as a consequence, its future prices.

"Students of world conditions believe that silver will sell higher, due to an increasing demand for hard money throughout the world. It is well known that there is not enough gold with which to transact business, and the paper money, which has been issued in European countries, is even now depreciating in value and is being replaced by silver coin. The demand for silver from European mints is heavier than it has been in years and may be expected to be still heavier at the conclusion of the war.

"The future for all of the metals is bright, indeed, according to the best opinion of those in a position to know."

There will be spent in the neighborhood of $2,500,000 in improvements in the mine and mills of the company in line with the policy that the company has heretofore been following. A large leaching plant will be constructed this summer to treat some 40,000,000 tons of carbonate copper ores. The acid will be supplied by the sulphuric plant now under construction.

B. S. Butler and Dr. F. F. Hintze of the Geological Survey arrived at Salt Lake City, June 14, to begin their study in connection with a professional paper for the Cottonwoods-American Fork mining area, of Utah, as requested in the petition recently presented to the Survey by mining men of Utah, acting through the Utah Chapter of the American Mining Congress. Messrs. Butler and Hintze established their headquarters in Big Cottonwood Canyon and began their work at once. The region under consideration is already a considerable producer and is regarded as one of great possibilities. The formation is unusually complex and the work undertaken by the Survey will be of great value to the operators of that region.

IMPROVEMENT IN MANAGEMENT OF FORESTS, SAYS MACBETH

Ravenel Macbeth, secretary of the Idaho Mining Association has this to say with regard to forestry relations:

"We have found, in our relations with the Forest Reserve officials, that the personal equation enters, to a large extent, into the matter. We have found in some sections prospectors have been encouraged in their work, whereas, in other sections these officials have failed to give such encouragement—in fact, have so strictly interpreted the provisions of the regulations, that prospecting has been hampered. We would state, however, that since the organization of this Association in 1913 a much better condition has existed and that constant improvement is being noted by the mining men.

"Formerly, in the matter of an examination to secure patent, officials who had no knowledge of the geological conditions existing in the section in which the property was located were appointed to make examinations and frequently, as a result of ignorance, reported adversely, but, owing to vigorous representations made to the Department by this Association, such examinations are now made by competent mineral inspectors.

"At present we have taken up with the Department the matter of withdrawing certain sections in small areas, over which sheep are now permitted to graze, for the use of prospectors who have found it impossible to prospect in certain sections of the State owing to the sheep having ccaned up the country and not leaving any feed for their stock."

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EDITORIALS

VICIOUS THEORY ADVANCED IN TAVENNER BILL

The labor leaders in Congress, presumably with the approval of the labor organizations, are making a persistent fight to secure the passage of the Tavenner Bill, H. R. 8665.

The bill reads as follows:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful for any officer, manager, superintendent, foreman, or other person having charge of the work of any employe of the United States Government to make or cause to be made with a stop-watch or other time-measuring device or system a time study of any job of any such employe between the starting and completion thereof, or by the movements of any such employe while engaged upon such work. No premiums or bonus or cash rewards shall be paid to any employe in addition to his regular wages, except for suggestions resulting in improvement or economy in the operation of any Government plant.

"Sec. 2. That any violations of the provisions of this act shall be deemed a misdemeanor and shall be punished by a fine of not more than $500 or by imprisonment of not more than six months, at the discretion of the court."

The bill applies only to Government employes, but is intended to fix the standard for employment in all lines. It makes possible the lowest efficiency and in effect forbids the employer the right to discover whether the service which he must pay for is being rendered or not.

Why would it not be equally reasonable and just to forbid the employe from counting the money which he receives for his work. My employer is forbidden to ascertain the amount of service which my mood prompts me to render as a day's work. I am prohibited from counting the money which his mood prompts him to give me as payment.

Why should not the groceryman be protected against the reweighing or the recounting by his customers of the goods sold instead of being supervised by a government inspector of weights and measures?

This fight is based on the theory that every man who is willing to work is entitled to a living and that if the whole number of wage-earners shall do all the work possible there will not be enough work to provide continuous employment for all, and therefore the interest of all wage-earners requires that none shall do so much work that there will not be enough left undone to require the employment of all others.

This theory is vicious to the extent that it makes for inefficiency. In this country the higher the efficiency the greater the demand. Are we to frame laws to protect against fraud in the purchaser of one kind of service and laws to protect fraud in another? Are we to frame laws against efficiency in order that all men may find employment by the process of the highwayman, who takes without compensation, or shall we form laws looking to that efficiency which will command the world's markets and not only make work for all, but puts labor at such a premium that the natural law of supply and demand will enable him to dictate industrial conditions? Avaunt with this hypocrisy which, while pretending to serve, robs the laborer of his earning power, his independence, his self respect and his dignity.

BINDING CONTRACTS ARE NECESSARY TO COLLECTIVE BARGAINING

The refusal of the miners of the Pittsburgh district to be bound by the New York wage scale agreement and the unrest which prevails in Indiana and elsewhere, raise many questions vitally affecting organized labor.

Is the authority of the duly accredited agencies of either side to a contract to be denied whenever the principals so decide and the parties to a contract accept its provisions only where it proves to be to their advantage? If so, it will be practically impossible to frame a contract so evenly balanced and providing such exact justice, or such equal advantage to both parties that neither will desire its repudiation.

The Constitution of the United States denies even to a State the right to impair the obligations of a contract. If such contracts are not to be binding except by mutually continuing consent, they cease to be contracts and there would seem to be no advantage in the wage scale conferences which cost so much of time and money.

If contracts made by the officials of a labor union on behalf of its members are to be repudiated there seems to be an end of the principle of collective bargaining.

The MINING CONGRESS JOURNAL believes in collective bargaining, but insists that a bargain must represent a meeting of minds between the parties authorized to act, where each party is at perfect liberty to accept or reject without the sacrifice of any existing right.

It is the inherent right of an owner to operate his coal mine with such agencies as he is able to provide free from outside interference.

Coal mine operators enter into a contract, the violation of which will make them liable for adequate damages with the representatives of an organization which is only to be binding upon the other party during its pleasure, and under threat that the operators' right to use any other agencies of production will be prohibited.

Such an agreement lacks two vital elements of every contract. It does not result from a meeting of minds and being binding on one party only is without adequate consideration.

Unless wage scale conferences are to result in binding contracts which effect a settlement of all points enumerated therein, the practice of collective bargaining will soon come to an end.

TRADE FOLLOWS EFFICIENCY

Sometime ago the MINING CONGRESS JOURNAL challenged the generally accepted theory that "trade follows the flag" and insisted that trade follows efficiency. Now comes Sr. Carlos A. Tornquist, of Buenos Aires, who has been called the Pierpont Morgan of South America with another theory: "The experience of the foreign banks in the Argentine Republic," he says, "has exploded the theory that 'trade follows the flag.' The results obtained there have shown that trade follows capital, and even in these early days of the investment of American capital in Argentine issues and enterprises there is ample evidence of the truth and soundness of the latter theory."

The MINING CONGRESS JOURNAL cannot change its conclusion even to meet the views of so eminent an authority. Capital always follows the course yielding the largest profit. European capital invested in South American countries, like all capital wherever invested in trade, will buy those goods which can be sold at the largest profit. All elements of trade must be considered, but in the end capital seeks the highest profit and will buy the goods which it can secure on the most favorable terms.

The flag will, or should, protect, and capital will follow the lead of highest profit into the markets of the world. The foreign market cannot be reached except on a competitive basis.

Trade follows efficiency.

MINERS NOT ENERGETIC IN LOOKING FOR MARKETS

Experts of the Geological Survey are at a loss to explain the length of time required for miners to learn of a shortage in the market. In some instances an active demand and high prices will exist for a year without greatly stimulating production.

This, of course, does not apply to gold, silver, copper, lead, zinc and metals having established markets. It does apply to a long list of valuable metals of which there are considerable deposits throughout the United States.

It apparently requires the actual solicitation of an ore buyer to arouse many miners to the fact that they can find a ready market for the mineral in their properties. While just at the present time ore buyers in considerable numbers are scouting about the country searching out supplies of various metals, many producers are not visited and large numbers who could be enjoying substantial profits are losing the best opportunity which has existed in thirty years for the sale of many minerals. The miner should be just as energetic in hunting out a market for his product as is the manufacturer.

GOVERNMENT EXPERTS SHOULD BE BETTER PAID

The mining industry is greatly interested in the present effort being made to increase the salaries of government employes. It is especially interested in seeing higher salaries paid to scientists engaged in economic work having to do with mining.

Owing to the unusual demand for high-class technical men, a large number of valuable specialists have left the service of the Bureau of Mines and the Geological Survey within the last eighteen months.

Even before the war began the government was acting as a training school for the private companies. The point has been reached where the standard of government work in the interest of mining cannot be maintained unless higher salaries are paid.

Years ago the Geological Survey salary was slightly in excess of that paid by colleges and universities for men of the same ability. Since, there have been very few increases in government salaries, the colleges and universities are now paying from twenty to forty per cent higher salaries than are paid in the government service.

Private enterprises have always paid better salaries for the same grade of talent.

The average salary of high-class specialists in economic work in Washington is between $2,500 and $3,000 per year. There are a few positions which pay $3,600, $4,000, and one or two as much as $5,000 per year. It is the desire, not to create a few high-salaried positions, but to have an appropriation which will permit of the payment of larger salaries to the majority of the members of the scientific staffs of the two bureaus doing mineral research work.

The fact that the public appreciates the class of talent in the government service is indicated by the very large number of separations which have taken place recently. A complete list of those who had left the service of the Geological Survey and the Bureau of Mines was printed in the April issue of the JOURNAL. To bring this list up to date it would be necessary to make considerable additions.

LITTLE GROUND EXISTS FOR ANY PESSIMISM

The decline in tungsten prices should not be the cause of any forebodings. While it is apparent that the supply of tungsten temporarily has exceeded the demand, yet there is reason to think that there has been some manipulation in prices which cannot be chargeable to the laws of supply and demand. With the steel industry as active as it is at present it is practically certain that there will be a good market for tungsten, probably for years to come.

Some are heralding the decline in

tungsten as a forerunner of the decline in other metals. Zinc prices are a little off, and this too is being pointed to as an indication of what may be expected from copper, silver and other metals. Little stock is taken in this argument by the government specialists who are keeping in intimate touch with the entire situation. As accurate data become more and more available it is found that the so-called war orders are consuming considerably less a proportion of the metals than it has been supposed. While the coming of peace will bring with it a period of uncertainty, during which it is impossible to predict just what may happen, the consensus of opinion here is that the rehabilitation of the industries in the countries at war insures a heavy demand for products of American metal mines for some years to come.

Legal Decisions

COVENANT AGAINST INCUMBRANCES

In an action by a vendee of coal land for damages on account of the breach of a covenant against incumbrances, by the existence on the land at the time of the conveyance of a subsisting but unused easement, the fact that the vendee bought the servient land as an outlet for the coal in other lands cannot be considered in estimating the damages, where there is proof that the vendor knew the land was bought for such purpose and such damages were not contemplated by the contracting parties and therefore not recoverable.

Smith *vs.* White (West Virginia), 87 Southeastern, 865, February, 1916.

RIGHT OF DIRECTORS

Until otherwise determined by a competent tribunal, the board of directors of a mining corporation whose election was certified in due form and who are in the actual control of the affairs of the corporation, must be recognized as its directors and the validity of their election cannot be adjudicated upon a petition for the removal of a case from a State court to a federal court.

Consolidated Interstate Callahan Mining Co. *vs.* Callahan Mining Co., 228 Federal, 528, p. 530.

CORPORATE FUNDS

A mining corporation organized to purchase, locate, lease or otherwise acquire mines, mining claims, mining rights, and to explore, work and develop same, and to quarry, mine, smelt, and prepare for marketing, ore, metal and mineral substances of all kinds, is not empowered or authorized to loan the corporate funds and receive interest thereon.

Riley *vs.* Callahan Mining Co. (Idaho), 155 Pacific, 655, p. 670, March, 1916.

See First National Bank *vs.* Callahan Mining Co. (Idaho), 155 Pacific, 673, March, 1916.

INTERESTED DIRECTOR VOTING

A resolution of a board of directors of a mining corporation passed at a meeting at which one of their number interested therein and necessary to a quorum is present and voting in favor thereof, is *prima facie* fraudulent and void.

Flanagan *vs.* Flanagan Coal Co. (West Virginia), 88 Southeastern, 397, p. 399, March, 1916.

APPOINTMENT OF RECEIVER

Where a mining corporation has in fact ceased to exist, whether from lapse of time, voluntary dissolution, judgment of forfeiture for negligent abuse of its powers, or where it is insolvent, or in imminent danger of insolvency, a court of equity has the undoubted right in a proper proceeding instituted by a creditor or a stockholder to appoint a receiver to administer the property.

Henderson vs. Palmer Union Oil Co. (California Appeals), 156 Pacific, 65, p. 66, March, 1916.

See Morgan *vs.* Dayton Coal and Iron Co. (Tennessee), 183 Southwestern, 1019, January, 1916.

LOCATION IN ALASKA

The location of a mining claim in Alaska under a power of attorney is valid if such power of attorney is duly recorded at any time before adverse rights accrue, or location is attempted to be made upon the same ground by another, and the statute does not require that the power of attorney shall be recorded before a location is made.

Cloninger *vs.* Finalison, 230 Federal, 98, p. 101.

OWNERSHIP OF ORES

The ownership of ore in a vein below the point of union with another vein is determined by priority of the surface location and belongs to the senior location in which one of the veins above the point of union has its outcrop or apex; and the rule applies whether such a vein has a separate apex or unites with still a third vein having its apex in the senior location.

Anaconda Copper Mining Co. *vs.* Pilot-Butte Mining Co. (Montana), 153 Pacific, 1006, p. 1008, December, 1915.

QUIETING TITLE

The owner of a lode mining claim is entitled to have his title quieted to the vein or

lode below the point of intersection with the defendant's vein, where the plaintiff's vein and the defendant's vein each has passed outside of the vertical planes of their surface locations, where it was expressly found by a jury that the vein below the point of intersection had its apex within the surface boundaries of the plaintiff's claim.

Square Deal Mining Co. *vs.* Colomo (Colorado), 156 Pacific, 147, April, 1916.

MILL SITE

The owner of a lode mining location, who purchased a mill site location located by others upon the same land, is not estopped from subsequently claiming the mill site under the lode mining location, though the persons locating the mill site did so on the representations that the land was non-mineral in character, as the representations of the mill site locators cannot be imputed to the owner of the lode location, unless it appeared that he had procured the mill site location to be made.

Worthen Lumber Mills *vs.* Alaska-Juneau Gold Mining Co., 229 Federal, 966, p. 968.

INDIANA EMPLOYERS' LIABILITY ACT

The employers' liability act of Indiana, of March 2, 1911, as applied to a mine operator, is not unconstitutional as being violative of the Fourteenth Amendment, or of either Section 12 or Section 23 of Article 1 of the State Constitution.

Vivian Collieries Co. *vs.* Cahall (Indiana), 110 Northeastern, 672, p. 676, December, 1916.

OTHER THAN STATUTORY SIGNALS

The California statute (Statutes of 1893, p. 82), providing a code of signals for mining operations does not prohibit the use of additional signals to indicate that men are to be hoisted or lowered; but if, in fact, such signals were used, the engineer operating the hoist was bound, in the exercise of due care, to act upon them when they were actually given him and if by any means he was advised that a miner was about to ride up on the bucket it was his duty to act upon such information.

Gibson *vs.* Kennedy Extension Gold Mining Co. (California), 156 Pacific, 56, p. 59, April, 1916.

MINER WORKING IN DANGEROUS PLACE

Section 3508, Code of 1915, of New Mexico, does not prohibit a miner from remaining or working in a room where a portion of the roof requires timbers and supports in order to render it safe, so long as the particular place where he is working is a safe place, and does not require such timbers or supports; and he is not guilty of a violation of the section nor can he be charged with contributory negligence as a matter of law so long as he remains from beneath the particular portion of the roof which is unsafe and dangerous; and contributory negligence under such circumstances is an affirmative defense and the burden of proof is upon the operator to establish the fact.

Melkusch *vs.* Victor American Fuel Co. (New Mexico), 155 Pacific, 727, p. 730, February, 1916.

RIGHT OF STOCKHOLDER

The purpose of Section 588 of the Civil Code of California in giving a stockholder the right to examine the property of a mining company, is to arrive at the value of the property in which the stockholder is interested and that value is composed of two elements: Economical and uneconomical working of the mine, and the extent and richness of the ore body; and the statute expressly gives the right to take samples, as no valuation could be placed upon ore bodies in the absence of some test or assay.

Symes *vs.* Sierra Nevada Mining Co. (California), 153 Pacific, 710, p. 711, December, 1916.

QUESTION OF FACT FOR JURY

The question of the operator's negligence is one of fact to be determined by a jury, where an injury caused by the sudden lowering or falling of the cage in a shaft of a mine would not have happened if the machinery installed had been properly used and the rule adopted by the operator followed by the plaintiff and a fellow servant, but where the accident could not have happened if the operator had provided additional apparatus easily installed or provided additional rules.

Ducktown Sulphur, Copper & Iron Co. *vs.* Fortner, 228 Federal, 191.

TAX ON RESULTS OF BUSINESS

A tax levied on a mining corporation under the income tax law of 1913, is not a direct tax on property because of its ownership where adequate allowance is not made for the exhaustion of the ore body, resulting from working the mine, but is in fact a true excise levied on the results of the business of carrying on mining operations.

Stanton *vs.* Baltic Mining Co., 240 United State, 103, p. 114.

See Brushaber *vs.* Union Pacific Railroad Co., 240 United States, 1.

Stratton's Independence *vs.* Howbert, 231 United States, 399, p. 413.

INCOME TAX LAW CONSTITUTIONAL

The income tax law of 1913 is not unconstitutional on the ground that it is not within the purview of the sixteenth amendment on the ground that it is not a tax on the net product, but in a sense somewhat equivalent to a tax on the gross product of the working of a mine by a corporation.

Stanton *vs.* Baltic Mining Co., 240 United States, 103, p. 112.

See Brushaber *vs.* Union Pacific Railroad Co., 240 United States, 1.

INJURY FROM LOOSE CAR

It is actionable negligence in a mine operator to so manage the operation of its mine as to negligently cause or permit a loaded car to run down the track in a mine and upon or against a miner engaged in placing loaded cars upon the cage to be hoisted to the surface.

Parks *vs.* Central Coal & Coke Co. (Missouri), 183 Southwestern, 560, February, 1916.

MINER MAY RECOVER

It is the duty of a coal company furnishing the means by which its employes are carried to and from their work to exercise ordinary care to provide reasonably safe methods of transportation, and if an employe is injured by defects in the track, or by the unmanageable character of a mule, or by other causes attributable to the negligence of the coal company, he has a right to recover of the company for such injuries.

Taylor Coal Co. *vs.* Miller (Kentucky), 182 Southwestern, 920, p. 921, February, 1916.

PROXIMATE CAUSE

In an action by a miner for damages for injuries received because of the alleged negligence of the mine operator, it must be shown that but for the operator's negligence in the respects charged the accident would not have happened; and the doctrine of intervening cause has primarily no reference to the conduct of the injured miner, but to some other responsible agency for which the operator was not responsible, intervening between the operator's negligence and the miner's injury, without which the accident would not have happened; but in such cases an intervening human agency may not relieve an intelligent operator, for if his original wrong concurred with such intervening cause, and both acted proximately at the same time in producing the injury, then either or both may be held liable.

Johnson *vs.* Plymouth Gypsum Plaster Co. (Iowa), 156 Northwestern, 721, p. 724, March, 1916.

RIGHT TO LIEN ON PLACER CLAIM

Under Section 4028, Colorado Revised Statutes of 1908, the words "deposit yielding metals or minerals," clearly include gold-bearing sands or gravels, which are commonly known as placers, and the provisions of the section giving liens to persons of designated classes, are, by this section, made to apply to persons who shall furnish materials or machinery "upon, in or for" any improvement, "of or upon such mine, deposit," etc., and this includes placer mines.

Colorado Gold Dredging Co. *vs.* Stearns-Roger Manufacturing Co. (Colorado), 153 Pacific, 765, January, 1916.

TAX ON OIL PRODUCTION

The power of the legislature to distinguish, select and classify objects of taxation has a wide range of discretion, and while the classification must be reasonable, yet there is no precise rule of reasonableness and there cannot be an exact exclusion or inclusion of persons and things. However, the classification adopted must always rest upon some difference which bears a reasonable and just relation to the act, in respect to which the classification is proposed, and can never be made arbitrarily and without any such basis. Accordingly, a statute levying one rate on ores bearing lead, zinc, jack, gold, silver, copper or asphalt, and which omits a gross production tax on coal, is not repugnant to the provision of the constitution of Oklahoma to the effect that taxes shall be uniform upon the same class of subjects. That mining property or the business of mining may be placed in a class by itself and taxed by some method peculiarly appropriate to that class is a valid exercise of a constitutional right on the part of the legislature, and it is competent for the legislature to arrange and divide the various subjects of taxation into different classes, providing the tax is uniform upon all those belonging to the same class and upon which it operates.

Gross Production Tax Wolverine Oil Co., *In re* (Oklahoma), 154 Pacific, 362, p. 367, January, 1916.

MORTALITY TABLES AS EVIDENCE

In an action by a miner for damages for a personal injury which impaired his power to earn money it is competent to use mortality tables in proof of the number of years which the claimant may be reasonably expected to live, although such tables do not prove how many years the miner would have been able to earn money.

Nelson *vs.* Black Diamond Mining Co. (Kentucky), 181 Southwestern, 341, p. 345, January, 1916.

DAMAGES FOR MINERS

A verdict for $10,000 for fractures to one arm of a miner is so flagrantly excessive as to furnish ground for reversal.

Indian Creek Coal Co. *vs.* Walcott (Kentucky), 182 Southwestern, 431, p. 632, February, 1916.

DAMAGES FOR INJURIES

A verdict for $5,000 is not excessive where the proof showed that the injured miner was 40 years of age at the time of his injury and was earning about $75 per month, that he suffered a compound fracture of one leg endured much pain, and the broken leg was some shorter than the other, and he could not bear any weight on such injured leg, and that the knee joint at the time of the trial was stiff, and since the injury he had not been able to do any considerable work.

Johnson v. Plymouth Gypsum Plaster Co. (Iowa), 156 Northwestern, 721, p. 727, March, 1916.

The
Nineteenth Annual Convention
OF THE
American Mining Congress

LA SALLE HOTEL, CHICAGO, ILLINOIS

NOVEMBER 13, 14, 15, 16, 1916

Chicago by reason of its central location, its spirit of cooperation, its interest in the various branches of mining and its ample hotel accommodations is an ideal location for a great mining convention. The convention will be divided into sectional meetings each devoted to a special branch of mining, thus providing for ample discussion of every important question and the making of comprehensive plans for the benefit of mining. The greatest meeting of mining men ever assembled in this country is practically assured.

Current Traffic Developments

Coal and Coke Cases Decided

The highly important cases dealing with coal and coke rates from Virginia points have been decided. The commission makes the following synopsis of its rulings in these cases:

1. Reasonable divisions to the Interstate Railroad out of the through rates involved fixed at 15 cents per ton on coal and 18 cents per ton on coke.

2. The provisions of section 16-A of the act regarding the rehearing of cases by the Commission does not contemplate that the rehearing be completed and a supplemental report and order made before expiration of original order.

3. Exhibits compiled by Commission's examiners of accounts, offered in evidence at a duly appointed hearing, without objection from interested parties, properly identified by the official stenographer and filed in the record along with all the other evidence in the case, are lawfully a part of the record.

4. Rates fixed under federal authority must yield "just compensation," which comprehends a reasonable return upon the value of property devoted to public use.

5. Where the traffic involved is only a portion of the traffic moving over the originating division, and only a small portion of the coal coke traffic moving over the line, which, in turn, is only a small part of the entire coal and coke tonnage moving over the entire system, a claim that the rates on the traffic involved are confiscatory is not established until it be shown that the rates on the other traffic moving over the originating line are reasonably remunerative and that the revenue derived from the other coal and coke traffic moving over the line is adequate.

6. Commercial competition a controlling factor in the adjustment of the rates here considered.

7. Reasonable rates on coal from St. Charles and Appalachia are found herein to be such as do not exceed the rates contemporaneously in effect from Middlesboro-Jellico to the same destinations by more than the differential herein fixed. Reasonable coke rates for the future will be such as do not exceed $2.50 per ton to Chicago with proportionately scaled rates to other destinations involved.

8. St. Charles included in Appalachia group and a differential from this group of 15 cents per ton over Middlesboro-Jellico rates on coal fixed. Coal Rates from Virginia Mines, 30 I. C. C., 635, modified.

9. The Appalachia group rate to be applied from operations on the Interstate Railroad.

May Exceed Group Rate 5 Cents Per Ton

In case No. 6492, the Brush Creek Mining & Manufacturing Company *vs.* the Louisville & Nashville Railroad Company the Commission sums up its ruling as follows:

1. Carload rates of the Cumberland Railroad and the Louisville & Nashville Railroad on coal from mines on the Cumberland Railroad to the northwest and the southeast found not to be discriminatory because they exceed group rates of the Louisville & Nashville Railroad to and from the same territories from and to mines on that road, but found to be unreasonable to the extent that they exceed such groups rates by more than 5 cents per ton, and the defendants required to publish rates on that basis. Reparation denied.

2. Rates on inbound supplies to mines on the Cumberland Railroad not found to be unreasonable or discriminatory.

Rate Increase Not Allowed

In the mattter of coal to Missouri stations the proposed increased rates on bituminous coal in carloads from mines on the Southern Railway in Illinois and Indiana to stations on the Chicago & Alton Railroad in Missouri have not been justified, the commission holds and schedules under suspension were ordered canceled.

Complaint Dismissed

In case No. 8342, Marquette Coal Company *vs.* Pennsylvania Railroad Company, shipments of coal from Bolivar, Pa., to West Albany Transfer, N. Y., for beyond, reconsigned to the Albany Southern Railroad at Stuyvesant Falls, N. Y., via Hudson, N. Y., were moved to Stuyvesant Falls through Hudson and Hudson Upper, N. Y. Defendants applied a rate of $1.90 per ton applicable from Bolivar to Hudson, declining to apply a rate of $1.90 applicable to Hudson Upper. The Albany Southern Railroad was thereby required to pay the Boston & Albany Railroad a contract charge of 15 cents per ton for moving the shipment on its account from Hudson to Hudson Upper and deducted 15 cents per ton from complainant's price. A rate of 60 cents per ton was applied on coal from Hudson to Stuyvesant Falls and no rate from Hudson Upper. The Commission held, that the legal rate was the combination rate of $2.50 per ton based on Hudson and that defendants legally applied the $1.90 rate to Hudson. Complaint dismissed.

Refunds Ordered

In case No. 5650, Charles Becker, Trading as Wisconsin Coal Company *vs.* Pere Marquette Railroad, the Commission ruled:

1. The "reasonable time" within which consignees should have given orders for reconsignment at Milwaukee or Ludington so as to have avoided the charge for reconsignment extends from the day on which (passing) notice was mailed until noon of the second day thereafter.

2. Reconsignment charges assessed between December 18, 1912, and February 9, 1913, should be refunded if orders for reconsignment were given prior to arrival of cars at Milwaukee or within the "reasonable time" prescribed.

3. Reconsignment charges assessed at Ludington between February 9, 1913, and April 10, 1914, should be refunded if carrier failed to furnish passing notice at Toledo, or if complainant had given reconsignment orders within the "reasonable time," or prior to the arrival of the car.

4. All demurrage assessed during period of controversy, December 18, 1912, to February 9, 1913, must be refunded.

5. Demurrage charges, lawfully accruing and assessed from February 9, 1913, to April 10, 1914, must stand.

6. Reconsignment charges at Milwaukee, subject to the finding as to "reasonable time," should be assessed between October 17, 1912, and December 17, 1912, inclusive.

Milwaukee Loses Case

In case No. 6446, the City of Milwaukee *vs.* the Chicago, Milwaukee & St. Paul Railway Company, upon complaint by the city of Milwaukee that the rates on anthracite coal in carloads from Pennsylvania mines to Milwaukee are unreasonable and unduly discriminatory; the Commission held:

1. That neither the rates all rail nor those via the car ferries across Lake Michigan have been shown to be unreasonable or to discriminate unduly against Milwaukee.

2. That the across-lake rate for local delivery at Milwaukee, which is 25 cents higher than the proportional across-lake rate to Milwaukee on traffic destined beyond, has not been shown to discriminate unduly against Milwaukee. The complaint was dismissed.

Car to Car Transfer

In case No. 6399, the Lehigh Valley Coal Sales Company *vs.* the Lehigh Valley Railroad Company, the commission denied reparation on account of services performed by complainant in connection with the transfer of interstate shipments of coal from open cars to box cars at Buffalo, N. Y.

In its decision, the Commission said, in part:

Although Canadian and western coal consumers may prefer its shipment in box cars, that custom does not make transfer from car to car transportation. The transfer herein involved was primarily for the commercial convenience of complainant and not a transportation service which defendant was required by the act to provide and furnish upon reasonable request therefor. The fact that defendant promised to reimburse complainant for the service the latter performed in the transfer of the coal from car to car and that defendant did provide an allowance of 15 cents per gross ton subsequent to such transfer do not, of course, constrain the Commission to find the allowance to be for a transportation service for which defendant may make an allowance.

From the facts of record it does not appear that the transfer of this coal from coal cars to box cars was a service of transportation which defendant was required to perform and for the performance of which by the owner defendant could lawfully pay an allowance. Manifestly, the Commission may afford relief only within the confines of the provisions of the law, no violation of which has here been proved. The complaint must be dismissed.

Sulphur Must Pay Higher Rate

In case No. 7546 of the Union Sulphur Company et al. *vs.* the Baltimore & Ohio Railroad Company, the Commission found that the increased rates on crude sulphur and brimstone from Atlantic ports to points in central freight association territory were found justified and denied that portion of Fourth Section Application No. 1772 for authority to continue rates on brimstone and crude sulphur from Baltimore, Md., to Cheboygan, Mich., which are lower than the rates contemporaneously applicable on like traffic to Alpena, Mich., and other intermediate points on the Detroit & Machinac Railway.

The following extract is from the decision:

Domestic sulphur encounters practically no competition except from iron pyrites, which has been substituted for sulpur in the manufacture of sulphuric acid by a number of plants. Domestic sulphur contains a much greater percentage of pure sulphur, but iron pyrites yields relatively more sulphuric acid. Iron pyrites is worth about $6 per gross ton, f. o. b. Baltimore, while crude sulphur is worth about $22.50 per gross ton. Pyrites is sold on a sulphur unit basis, the price varying with the percentage of sulphur which it contains. The difference in cost, together with cheap ocean rates on pyrites from Spain and other fields of production abroad, account for the substitution of iron pyrites for sulphur. Sulphur must be transported in tight box cars, while pyrites may be handled in open gondola or coal cars. The average loading of sulphur appears to be about 60,000 pounds per car, while pyrites loads to over 80,000 pounds.

NEW MEXICO CHAPTER OF AMERICAN MINING CONGRESS IS FORMED

John M. Sully, of Santa Rita, Elected First Governor—E. L. Wolcott Finds Mining Men of New Mexico Anxious to Cooperate With National Organization—List of Officers

A New Mexico chapter of the American Mining Congress has been formed. John M. Sully, of Santa Rita, was elected governor. This chapter promises to be a very active one.

Through the efforts of E. L. Wolcott, a number of mining men in New Mexico were convinced of the necessity of cooperating with the national organization. He called attention to the fact that practically every industrial activity maintains a national organization. A large number of industries which are insignificant when compared with the mining enterprise spend many times as much money keeping abreast with the national affairs and in making their influence felt in the national capital.

The mine operators in New Mexico apparently are very anxious to embrace this opportunity of cooperating with mining men in other parts of the United States.

The meeting at which the Chapter was organized was well attended by representative mining men. The officers of the New Mexico Chapter are as follows:

Governor—John M. Sully, Santa Rita.

First vice-governor—T. H. O'Brien, Dawson.

Second vice-governor—George H. Utter, Silver City.

Third vice-governor—E. M. Sawyer, Tyrone.

Treasurer—T. L. Lowe, Silver City.

Secretary—Don W. Lusk, Silver City.

Directors—C. T. Brown, Socorro County; T. H. O'Brien, Colfax County; E. D. Tittman, Sierra County; W. C. McDonald, Lincoln County; E. A. Miera, Sandoval County; Gregory Page, McKinley County; L. Bradford Prince, Santa Fe County; John M. Sully, Grant County; A. T. Kirk, Bernalillo County; J. A. Mahoney, Luna County; Evan Fraser-Campbell, Dona Ana County; George A. Kaseman, Bernalillo County; J. L. Lawson, Otero County; J. M. Palmer, San Juan County; Juan M. Vigil, Santa Fe County; Charles A. Spiess, San Miguel County; George H. Utter, Grant County; E. M. Sawyer, Grant County.

Executive Committee—John M. Sully, chairman; C. T. Brown, George H. Utter, E. M. Sawyer and T. H. O'Brien.

CHARTER TO BE ISSUED

The New Mexico Chapter will receive its charter within the next two weeks and in the meantime new members are being solicited. The fifty members necessary to secure a charter were secured the past week through the personal efforts of Mr. Wolcott and George H. Utter, and include the following:

Silver City—M. W. Porterfield, George H. Utter, William H. Newcomb, Charles B. Morrill, George F. Utter, Frank W. Vellacott, F. C. Light, W. S. Cox, Percy Wilson, Terrell & Black, W. A. Welsh, W. B. Walton, C. W. Bayne, E. A. Layne, J. C. Woodward, D H. Tulloch, C. W. McSherry, J. M. Kiner, Jackson Agee, Don W. Lusk, Dean Alexander, J. A. Shipley, T. L. Lowe, Jo E. Sheridan, M. R. Buchanan, A. A. Burdette, William Harris, Theodore W. Carter, E. M. Brumback, F. L. Cox, J. R. Hicks, Isadore Malmuth, E. J. Spitzley, Sam Agee, Dr. Luis de la Garza Cardenas, Martin V. Cox, Leo F. Schiff, Eli Borenstein, C. F. Reihs, F. A. Bush, Howard H. Betts, Raymond R. Ryan, A. S. Goodell, R. H. Boulware, E. B. Venable, C C. Royall, Col. J. W. Carter.

Pinos Altos—James H. Bell, A. R. Davidson.

Bayard—Paul A. Larsh.

Steeple Rock—Harry A. Martin.

A. H. Brooks, H. G. Ferguson and J. Fred Hunter, of the Geological Survey, have returned to Washington after a month spent in the military training camp at Fort Oglethorpe. They are of the opinion that service in these military camps is of the greatest value to men who are called upon to rough it in the mining regions of the country.

W. C. Phalen, of the Geological Survey, spent a portion of last month in Mineral County, Va., inspecting pyrite mines.

Dorset Carter, of McAlester, Okla., who has been spending some time in Washington, where he appeared before the Indian Committee of the House on matters of interest to the Oklahoma operators, has returned to his home.

F. Lynwood Garrison has left for Brazil to be gone several months.

GEOLOGIC EVIDENCE INDICATES THAT VEINS IN ROCHESTER DISTRICT GO DEEP

New Nevada Camp Subject of Special Article by F. C. Schrader of the United States Geological Survey— Deposits Apparently Are of Late Mesozoic Epoch of Mineralization

By F. C. Schrader

The new mining district of Rochester is in the southern end of the Star Peak Range which forms the north half of the Humboldt Range. American Canyon, noted for its large production of placer gold, heads in the eastern part of the district.

The ore deposits are causally related to the dominant dynamic geologic structures. They consist of silver and gold-bearing veins, lodes and associated replacement bodies. They occur in volcanic rocks which are chiefly rhyolites or rhyolitic and of Triassic age. The rocks, having an estimated thickness of 2,000 feet, occur in superimposed flows that dip gently to the east. The veins dip steeply to the west. Some of them have a length of a mile and in some, good ore bodies are opened to the depth of a thousand feet.

The deposits lie in two north-south belts, Nenzel Hill belt on the east and Lincoln Hill belt on the west, which are spaced about two miles apart and are each a mile in width and five miles long. In the Nenzel Hill belt they are chiefly silver-bearing, in the Lincoln Hill belt chiefly gold-bearing.

The Nenzel Hill belt near its middle point contains, Nenzel Hill, an oval silicified knob 3,000 feet long, the seat of the most important deposits of the district. Here the deposits occur chiefly as quartz replacement veins and allied bodies in and associated with fissures, joint planes and shear zones. Some of the veins are 40 feet in width. The ores which average about $20 to the ton contain chiefly silver, but carry also several dollars to the ton in gold, which metal increases in amount with depth.

The ore minerals are chiefly argentite with a little associated proustite, cerargyrite, bromyrite, pyrargyrite, and occasionally scales of native silver and specks of free gold. From the occurrence of bindheimite which is common in the ores it is inferred that silver-bearing sulphantimonites are probably generally present. Pyrite, chalcopyrite, sphalerite and galena are very sparingly present. From the 200-foot level down the ore is mostly sulphide.

At Packard, two miles south of Nenzel Hill, the deposits occur chiefly as massive replacement ore beds in the rhyolite and are associated in origin with a neighboring fault fissure. The main ore bed has a known width of about 100 feet and is opened to the depth of 200 feet. The deposits contain but little quartz, the ore minerals which are chiefly cerargyrite and argentite being contained in the soft schistose rhyolite. Most of the ore produced up to 1916 averaged about $50 to the ton.

In the Lincoln Hill belt the deposits are more distinctly veins of the filled fissure type. The veins are relatively narrow and average only about 5 feet in width. The gangue is chiefly quartz which contains almost exclusively gold ores of high grade, averaging about $140 to the ton, and some that are very rich. The gold is free. The associated minerals are pyrite, arsenopyrite, tourmaline, specularite, argentite, bromyrite, and telluride.

On the north in the head of Spring Valley much of the gold is coarse, which fact suggests that these veins and perhaps similar ones now removed by erosion probably represent an important source of the rich placers mined in Spring Valley and American Canyon.

From the presence of tourmaline and other minerals of deep-seated origin, the replacement character of the deposits, and hydrothermal alteration of the rocks, the Rochester deposits seem to have been formed at relatively high temperatures and at considerable depth. Their origin, accordingly, is referred to magmatic hydrothermal solutions and gases emanating from post-Jurassic granite, which as a batholitic mass intrudes the rocks at Wrights Canyon on the north and is believed to extend in depth beneath the Rochester district. The deposits, therefore, seem to belong to the late Mesozoic epoch of metallization and are probably of early Cretaceous age.

From the deep-seated character of the deposits and their close association with the major geologic structures which are shown to have been impressed upon the rocks of the region from the tops of the mountains to below the floors of the deepest valleys the deposits are believed to extend to considerable depth.

C. E. Siebenthal, of the United States Geological Survey, has returned from an inspection trip to the lead and zinc properties in eastern Tennessee. He also attended the commencement exercises at the University of Chicago.

CONSOLIDATED KANSAS CITY SMELTING AND REFINING CO. WINS COPPER MATTE CASE

"Regulus of Copper" and "Copper Matte" Held to be Synonymous— Weakness of Statute Allowing Entry of Lead in Copper Matte without Payment of Duty, is Pointed Out

The board of general appraisers has decided that merchandise known and recognized in trade and commerce as copper matte is properly entitled to free entry under the provision in paragraph 461, act of 1913, for "regulus of . . . copper." This conclusion is inevitable inasmuch as the terms "copper matte" and "regulus of copper" are synonymous in meaning and refer to the same article.

The Consolidated Kansas City Smelting & Refining Co. protested against the assessment of duty by the collector of customs at the port of El Paso, a portion of the ruling reads as follows: The merchandise covered by these protests consists of so-called copper matte, which was imported into this country from Mexico, and upon which duty was levied at the rate of three-fourths cent per pound upon the lead contained therein, under the following provision in paragraph 152 of the act of 1913:

Lead-bearing ores of all kinds containing more than 3 per centum of lead, ¾ cent per pound on the lead contained therein: . . .

The importers contend that the merchandise is entitled to free entry as regulus of copper under the following paragraph of said act:

461. Copper ore; regulus of, and black or coarse copper, and copper cement; old copper, fit only for remanufacture, copper scale, clippings from new copper, and copper in plates, bars, ingots, or pigs, not manufactured or specially provided for in this section.

The question here presented has been the subject of a number of rulings by the courts and this board.

In the matter of the protests of the American Metal Co., and Lewisohn Bros., decided by this board in February, 1896, and reported in G. A. 3394 (T. D. 16966), it was held that articles called copper matte were entitled to free entry as regulus of copper; that the term matte was synonymous with regulus, and that the same was not an ore of any kind.

Later, in a case involving a protest filed by the Philadelphia Smelting & Refining Co., this board, in G. A. 4308 (T. D. 20326), followed its former ruling and again held that the article was free as regulus of copper although it was called copper matte. This decision was affirmed on appeal to the Circuit Court o fthe United States in the case of Spencer *vs.* Philadelphia Smelting & Refining Co. (124 Fed., 1002).

Still later, in a case involving the protest of the El Paso Smelting Works, this board again decided (G. A. 5119; T. D. 23656) that the article known as copper matte was free as regulus of copper. Likewise, in Abstract 35013 (T. D. 34279), the board followed its former rulings and sustained the claim that so-called copper matte was free as regulus of copper. The last-mentioned ruling was appealed to the Court of Customs Appeals and there affirmed in the case of United States *vs.* American Smelting & Refining Co. (5 Ct. Cust. Appls., 398; T. D. 34937), the court holding that "the goods involved in this appeal are copper mattes and are entitled to free entry as regulus of copper, inasmuch as the terms 'copper mattes' and 'regulus of copper' have admittedly come to mean the same thing."

All of the issues in the case at bar have been thoroughly tried out and the brief submitted by counsel for the Government is very elaborate, exhaustive, and complete.

The Assistant Attorney General now seeks to have the board find as facts that the article in question is not regulus of copper; that copper matte is not regulus of copper; that the merchandise under consideration is not a copper matte but is more accurately described as leady copper matte; that the word "regulus" is a foreign term and is not used in this country; that by reason of the discovery of a new process for smelting copper mattes containing lead, the lead which was formerly lost in the process of smelting is now reclaimed and saved and that because of this newly discovered process the trade no longer recognizes as copper matte any copper matte which contains lead in large or appreciable quantities; that the mattes here in question, being known as leady copper mattes, are distinguished in trade from regulus or ordinary copper mattes, and, being of a different character from the latter, their classification is not necessarily controlled by the decisions of the court and of this board hereinabove cited.

Moreover, counsel for the Government concedes that the articles are not dutiable under paragraph 152 as copper ore, and that the collectors' classification thereof as such was made in error. He contends, however,

that said merchandise is dutiable under either of the following paragraphs of the present tariff act: Paragraph 153 as a form of lead not specially provided for; paragraph 57 as a lead compound not specially provided for; paragraph 81 as a mineral substance; paragraph 154 as a metallic mineral substance in a crude state or a metal unwrought; paragraph 385 as an unenumerated manufactured article, or under paragraph 386 according to the rate applicable to the component material of chief value. But, inasmuch as we have reached a definite conclusion with respect to the tariff classification of said articles, it is unnecessary to here discuss any of the several claims alleged in the protests, save that under paragraph 461.

Although the record made up is very voluminous, we are unable to find anything therein which would warrant us in reaching a conclusion different from that heretofore arrived at in the various rulings of the courts and this board. If a change in the law is desired, it can only be brought about through legislation. It is significant, however, that Congress, up to the present time, with all of the prevailing decisions on copper matte or regulus before it, as well as the ruling (T. D. 9473) made by the Treasury Department nearly 27 years ago, has not seen fit to make dutiable the lead contents of copper regulus, otherwise known as copper matte, nor even to fix a maximum limit concerning the amount of lead which may be allowed free entry when contained in copper regulus or matte. This omission on the part of Congress is particularly noticeable when it is observed that specific provision is made for the zinc contents in lead ores and for the lead contents in zinc ores.

The terms "copper regulus" and "copper matte" have uniformly been held to be synonymous in meaning, and the proof here submitted merely tends to corroborate the correctness of such rulings.

The contention of the Government that the word "regulus" is a foreign term which is not used in the trade and commerce of this country, and therefore is not susceptible of commercial proof, cannot prevail here. Irrespective of the origin of the word, it has become a domestic term by virtue of congressional enactment. If the meaning thereof cannot be ascertained by trade proof or otherwise, then it is perfectly clear that the provision for regulus of copper in paragraph 461 must be held to be null and void on the ground that it is meaningless. There is, however, no justification herein for any such conclusion.

James S. Douglas, of Arizona, is spending some little time in the East.

E. A. Schubert, of Roanoke, Va., was a visitor at the Mining Congress office last month.

RECENT MINING PATENTS

1,187,822. Ore Concentrator, by George B. Eberenz and James I. Brown, of Cripple Creek, Colo.

The invention relates to ore concentrators of that class where the ore is concentrated by gaseous flotation of mineral particles in liquid. They claim to have found that horizontally operating agitating blades do not bring the finely ground ore into thorough contact with the air and frothing agent, and one of the objects of the invention is to improve upon constructions of this character by the provision of agitating blades which move in a vertical plane, and in this connection to provide a spitzkasten so connected with the agitating chamber that the finely ground ore and liquid will be driven into the lower end of the spitzkasten and then sucked back into the agitating tank over the top of the agitating blades whereby more air is beaten into and mixed with the mass in the agitating tank and the whole mass returned again and again to the spitzkasten where the concentrates rise and pass off until the separation of the concentrates from the gangue is complete.

No. 1,187,549. Crushing Machine, by Axel G. P. Rapp, of Chicago, Ill., and is assigned to the Link-Belt Company.

Mr. Rapp claims to have a crushing machine comprising a cylindrical crushing surface, spaced feeding teeth projecting outwardly beyond the crushing surface, with a curved concave being channeled throughout its entire from and above the roll to form a receiving and feeding hopper, the surface of the concave being channeled throughout its entirs effective width along lines located in planes perpendicular to the axis of the roll, the axis of the channels being substantially in line with the feeding teeth on the roll, and the side walls of the channels being outwardly and upwardly inclined to meet along ridges between the feeding teeth. This invention particularly relates to that type of machine wherein the material to be reduced is crushed between the concave fixed plate and the rotating roll, where the crushing is accomplished by teeth or knobs on the roll, and the material drawn down into the aperture between the concave and the roll by a series of projecting spikes or teeth.

No. 1,187,481. Carbide Miner's Lamp, by John B. Anton, of Monongahela Borough, Pa. This invention consists in a new and improved carbide miner's lamp. The object in view is the provision of a lamp which will be of simple, compact, durable and inexpensive structure, wherein the gas will be presented to the burner tip at uniform pressure in a cleansed and cooled condition, free from water

and mechanical impurities, and wherein the reflector may be readily removed and then replaced, and the burner tube and tip cleansed.

No. 1,187,050. Method of Carbonizing Coal and Obtaining Gas. This invention is by Henry L. Doherty, of New York City. The object of the invention is to provide a method of carbonizing fuel which will permit the carbonization of the fuel in a shaft furnace by heat developed in the shaft furnace itself and at the same time to take off all the products of the carbonizing operation. The invention, briefly stated, comprises the charging of bituminous fuel into a shaft furnace, the establishing of a region of localized and limited combustion in the interior of the fuel mass by introducing a carefully regulated volume of air thereinto whereby a relatively short middle section of the fuel mass in the shaft is raised to a carbonizing temperature, withdrawing the gaseous products of the carbonization through the relatively cold fuel mass in the upper portion of the shaft, whereby the sensible heat of the gases discharging from the carbonizing zone is absorbed by the cold fuel, deluminating a portion of the gas, saturating the same with water vapor, and conducting the vapor-laden deluminated gas to the lower part of the shaft furnace and passing it upward through the mass of coke, filling the same. This coke, of course, discharges from the carbonizing zone at a comparatively high temperature. By properly proportioning the relation between the volume of the vapor and deluminated gas returned to the shaft and the heat held by the coke, filling the part of the same below the carbonizing zone, it is possible to cool the coke discharged down to practically atmospheric temperature.

No. 1,186,874. Vacuum Ore Separator. This invention is by Harry H. Baer, of Orrville, Ohio. The invention relates to improvements in vacuum ore separators, and its objects are: first, to remove by suction the lighter particles of metal producing ores or other metal carrying products, after the ore, rock or other metal carrying products have been reduced by a grinding process to a predetermined degree of fineness; second, to feed the ground product upon an endless conveyer whereby better distribution is brought about by extending the endless conveyer into the inclined rotating cylinder; and third, to withdraw the air from the rotating cylinder while it is being rotated, the inclination of the cylinder being regulated or adjusted with reference to the materials being treated.

No. 1,186,454. Miner's Electric Lamp. This invention is by Angelo Toler, of Berwind, Col., and relates to improvements in electric lamps for miners' use and of the class in which the lamp is detachably connected with the miner's cap, while the battery is connected with the waist belt. The object is to provide a lamp of this character so that there will be no possible chance for a spark which might ignite the coal gas or dust within the mine. The lamp proper and its screw stem are mounted in a socket carried by the lamp frame, the filament members of the lamp being respectively electrically connected with contacts concealed within the base of the frame by means of a screw cover which closes the chamber in the base and is locked against removal except by the employment of a special key. Hence, there is no opportunity for an exposed spark resulting from arcing at either contact with which the filament of the lamp is connected. Even the miner himself cannot remove this cover, since he is not supposed to have a key which will unlock it.

No. 1,186,306. Process of Extracting Metals from their Ores. This invention is by William E. Greenawalt, of Denver, Col. It has for its object the attainment of a praticable method of applying electrolysis to the hydrometallurgical process by overcoming entirely the difficulties due to fouling of the electrolyte. To accomplish this the electrolyte is kept separate and distinct from the leaching solution, or lixiviant. In this process the copper is dissolved, preferably, either as the chloride or sulphate. It is then precipitated with hydrogen sulphide, while an equivalent of acid is regenerated. The acid solution is then filtered from the sulphide precipitate and returned to the ore, and this cycle is repeated as often as necessary to get the desired extraction. The precipitate is electrolyzed, preferably to recover the copper and sulphur, so that the sulphur may be again converted into hydrogen sulphide to again pass through another cycle.

No. 1,185,902. Process of Treating Ores. This invention is by Royal S. Handy, of Kellogg, Idaho, and relates to a process for the extraction of metal values from ores, pertaining especially to a process employing an aqueous solution of a suitable chloride.

No. 1,185,817. Process of Treating Metal and Mineral Bearing Materials. This invention is by John L. Malm, of Denver, Col., and is particularly adapted for the treatment of sulphide ores containing iron and other metals such as copper, gold, zinc and silver. In carrying out the invention, the dry ore is fed into a tube or other mill where it is subjected to the action of a halogen gas, preferably chlorine, and a cooling agent in the form of air, whereby gas may act upon the metal contents to such an extent that the chlorine gas is combined with the iron sufficiently to form either the ferrous or ferric chloride dependent upon the metal contents of the ore, this condition being determinend by supplying the proper quantity of chlorine to the

iron so that sufficient chlorine for recovering the other metals in the ore may be obtained from the iron chloride when it is broken up. The substantially dry ore passing from the tube is then charged into a suitable roasting furnace, and sufficient heat is applied to cause the sulphur in the ore to produce sufficient heat to ignite the ore. The external heat may then be eliminated, if their is sufficient sulphide contents in the ore to furnish the necessary heat.

No. 1,185,809. This invention is by Nilas D. Levin, of Columbus, Ohio, and is assigned to the Jeffrey Manufacturing Co., of Columbus, Ohio. It relates to improvements in the devices for supporting power drills that are used in forming the apertures in coal or rock for receiving blast charges, particularly in drilling mechanisms of the class wherein each has a main frame adapted to be secured at the top and the bottom to external stationary abutments, such as roof rock and mine floor. Its object is to provide a drilling mechanism with means of support during transportation which will be entirely independent of the fastening devices of the main frame, and to avoid the necessity of separating the elements of the apparatus one from another, beyond the withdrawal of the tool, and enable a single operative to load and unload the combined mechanism, move them from place to place and erect or take down the main frame without separating the tool frame or motor frame therefrom.

Hearings Assigned

Hearings having a bearing upon the mining industry are under assignment at the Interstate Commerce Commission as follows:

July 3. Toledo. Examiner Worthington. I. & S. 834. Coal to Toledo and western stations.

July 6. Philadelphia. Examiner McKenna. No. 8833. Lehigh Coal and Navigation *vs* Louisville and Nashville Railroad.

July 10. Washington. Examiner Gerry. I. & S. 800. Coal from Pennsylvania mines. No. 8694. Ford Colleries Co. *vs.* Bessemer & Lake Erie.

July 11. Atlantic City. Examiner Marshall. I. & S. 774. Bituminous coal to central freight association territory.

July 13. Atlantic City. No. 8725. Lake cargo coal rates. No. 8598. Pittsburgh Coal Operators' Association *vs.* Pennsylvania Railroad.

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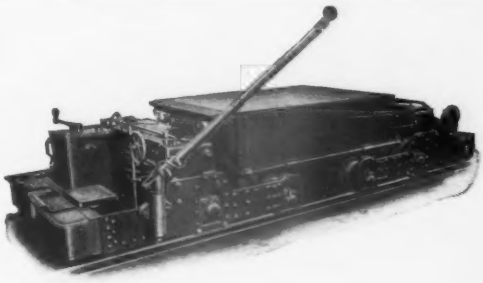

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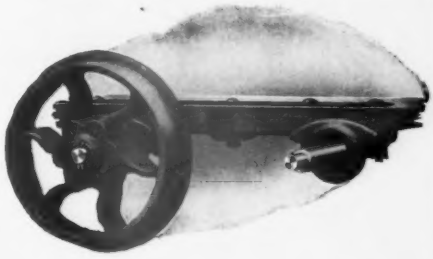

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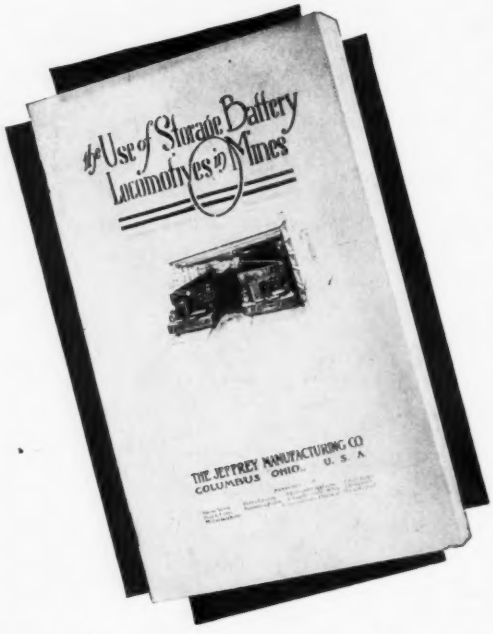

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